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THE MEDICAL JOURNAL OF AUSTRALIA.

VOL. II.—3RD YEAR. SYDNEY: DECEMBER 23, 1916. No. 26.

ROMANCE IN MEDICINE.

II.

MOSQUITO AND INSECT-BORNE DISEASE.[1]

By **J. C. Verco, M.D. (Lond.), etc.,**
Lecturer in Medicine, University of Adelaide,
Consulting Physician, Adelaide Hospital.

A great general led his brave soldiers into a strange land to fight their foes and build a city. They camped in a green vale by the still waters. But soon they began to shake and tremble as though seized with a fearful terror, and crawled into their tents. Nor could their leader by promise or threat move them to fight or work. He sat down, his face in his hands, in mingled shame and rage. But chancing to look up he saw a man on a giant bird, who drew near, alighted at his side, and asked the cause of his grief. He told his sad plight. The magician from his magic apparatus drew forth a round stone clear as crystal. This he polished carefully on his robe and peered through it, first up at the sky, then into the still pools, next at the quaking troops, and last at the rocks in the hills around. Then he spoke: "In the pools lurk evil genii in millions, who move in their submersibles, and from them are set free on the surface as many monoplanes, which fly through the air. In each one is a malignant spirit. During the darkness while your soldiers sleep, he volplanes gently down, stealthily stabs them with his lance, and instils a venom into their blood, which breeds myriad minute morbific creatures that sap their strength and courage.

"From yonder hill dig out a shaley rock, and cast it into the pools until they shimmer with rainbow tints. Then shall the evil genii die, suffocated in their submersibles, and shall no more mount in their aeroplanes into the sky." Next he vaulted upon his giant bird. It spread its enormous pinions, and, speeding on the wings of the wind, was quickly out of sight, passing over river, lake and ocean, and he soon returned, laden with faggots of bark from forest trees, clothing the mountains of a new world. From this, by his alchemy, the magician extracted a precious powder, bitter as wormwood, a pinch of which he placed on the tongue of every sick soldier; and behold the evil creatures that infested them died, their trembling and weakness vanished, and it came to pass that the troops rose up new men to fight and build, and founded their far-famed colony.

This romance, granted an author's artistic licence, is, as Andrew Laing would say, "as true as possible."

My lecture to-night is on Mosquitoes and Insect-borne Diseases.

The ague, as popularly known, causes attacks with three stages, first, a cold shivering stage, then a dry burning stage, and last a moist cooling stage.

These constitute an ague fit. It may come at almost the same hour, every other day in tertian ague, or every third day, in quartan ague.

In another more serious form these "ague fits" may be absent, but an irregular fever is present, lasting weeks or months.

Two points may be noted.

1. During life the patient may grow very pale, anæmic, as though his blood were not red enough.

2. After death his internal organs may be found very dark.

The microscope shows this to be due to deposit in the tissues of a black colouring matter called melanin.

Anæmia during life, and melanin after death.

Let us see how much we knew about ague when I was a medical student.

My text books taught that its exciting cause was an emanation, named "Malaria"—Italian for "bad air." This "bad air" emanated chiefly from swamps or marshes, and was termed marsh miasm, and the ague "marsh fever." It was supposed to be generated by the decay of organic matter, of vegetable rather than animal, but especially of both combined.

The nature of this emanation was unknown. The air over marshes, when analyzed, yielded no chemical poison. Some believed it to be lowly vegetable organisms, exceedingly minute, inspired with the air or drunk in water, yet no organisms having any evident relation to the disease could be detected in the atmosphere or the swamps.

Teachers who held this theory said the poison was not reproduced in the human body, for patients did not infect other people. Ague was, as they expressed it, miasmatic, but not infectious or contagious.

The curious, marked periodicity of the complaint, the ague fit at a particular hour every second day, or every third day, was very striking, but altogether inexplicable.

Though ignorant of the nature of the immediate cause, and of its mode of entry into the system, and unable to explain its peculiar periodicity, they were acute observers, and found out much. They knew marshes were mostly responsible for it, hence they drained them to prevent it. It travelled horizontally rather than vertically, so if people would live high enough above the marshes they were less likely to contract it; it did not usually travel beyond a certain distance; various obstacles, such as a grove of trees, would stop it; it travelled generally with the wind, and not against it; it was specially virulent after sundown and before sunrise; sleeping in the open air or with open windows was dangerous, hence people should remain indoors before sunrise and after sunset, and keep their windows closed at night.

They knew too the specific remedy was quinine, which could be relied on to cure. But they knew this only empirically, from experience. According

[1] Being a lecture delivered in the University Extension Course at Adelaide on July 6, 1915.

to legend its value was revealed to a Jesuit missionary in Peru, who, when prostrate with fever, was cured through administration of some bark by a South American Indian. Hence its popular name of "Jesuit's bark,' and "Peruvian bark." In 1638 the Countess of Chinchon, the wife of the Governor of Peru, was rid of an attack of fever by its use, and so the remedy came to be known as "cinchona" (or chinchona).

But how it acted was a mystery. And why it arrested these strange periodic attacks of fever, so as to be called an "anti-periodic," and yet had no effect upon similar periodic attacks in pyæmia or blood-poisoning, was quite unaccountable.

Their ignorance misled them of course into many amusing absurdities. One author (Hauschka) advised, "On going to a dangerous place assume at once the peculiar mode of life of the inhabitants; on the Vistula drink schnapps; in Hungary eat only melons and pickles with plenty of pepper, in Italy drink abundance of lemonade and black coffee, and avoid eating at night."

Such was the state of our knowledge and the degree of our ignorance just forty years ago.

In 1880, however, an epoch-marking observation was made. Alphonse Laveran, a French military surgeon, discovered in the blood of malaria patients certain small bodies which he considered to be parasites and the cause of the disease. They were oval or crescentic, and contained a little clump or wreath of pigment. When recorded by him this was regarded as romance, the imagination of an enthusiast, who mistook artificial changes in the blood corpuscles for fancied parasites.

But soon afterwards, Richard confirmed the discovery and carried it further. Blood, as you know, contains red corpuscles, giving its red colour. He recognized within them tiny white bodies with a small nucleus, and smaller specks of black pigment. They showed amœboid movements; they could slowly push out parts of their jelly-like bodies and withdraw them again.

Another observer, Golgi, in 1885, traced the development of this amœbula or little amœba in the corpuscle, saw it increase in size until it nearly filled the cell, which grew pale, then become converted into a sort of rosette with a group of melanin particles at its centre and with round bodies set in a circle at its circumference, each with its own nucleus and a bit of melanin, and finally burst the substance of its containing corpuscle, and discharge its spores into the blood-stream, where each could attach itself to a fresh corpuscle, and repeat its little life history; while the central unused melanin would be taken up by white corpuscles, carried away, and deposited in the various organs of the body.

Ague, then, was due to an animal parasite in the blood, and here was the demonstration of its life history from birth to reproduction, and this cycle could be repeated indefinitely.

How long would such a cycle take? In some two days; in some, three. And this remarkable fact was noted. In tertian ague, where the ague fit occurred every other day, it took two days; in quartan ague, where the shiver occurred every third day, it took three days, i.e., the cycle was exactly the interval between the several ague fits in each kinds of ague; and still more interesting, the sporulation, the discharge of the mature spores from the rosette into the blood, corresponded in time with the cold stage of the ague fits. The disease, then, was due to these animal parasites, and the ague fits were due to the liberation of their spores in the blood.

The strange periodicity of malaria was thus completely explained. Why did a man with tertian ague have a fit every other day at eleven o'clock? Because his parasite took exactly 48 hours from the time it was liberated as a spore to come to full maturity and liberate its own batch of spores, and sporulation it was which excited the fit.

Another enigma was solved. Why was this periodical fever cured by quinine, whereas other diseases with somewhat similar periodicity were not? Because malaria periodicity was due simply to the duration of the life of one generation of spores, and a dose of quinine could kill that whole generation and so put an end to the disease, could kill all the animals that caused it, whereas other periodic diseases were not due to these animals.

The anæmia of the patient during life was explained. It was due to the conversion of the red colouring matter of the blood corpuscles into black pigment, so that they became pale and the blood poor; the dark colour of the various organs in the body noted after death was also explained; it was due to deposit in them of this melanin.

Such was the advance in knowledge during the interval between 1880 and 1894.

But other questions immediately arose. If ague is due to these animal parasites in the blood, do they also live outside the human body? If so, where? In the waters of the marsh, or in the air above it?

Some thought they might live in the marsh. To test this theory they gave healthy persons water from malarious districts, such as the Pontine Marshes, in order to cause infection, to drink it as mixtures, or inhale it as sprays; but these experiments were all negative; ague could not thus be communicated.

Then there was another query. If the parasites came from without, how were they introduced into the human blood?

Laveran had made two observations: (*a*) In the irregular fever he discovered, as we have said, the peculiar body called a crescent, somewhat moon-shaped, and larger than Richard's intra-corpuscular amœbula of tertian and quartan fevers. This crescent was not seen to undergo any changes in the blood and seemed to have no function there. He also noted (*b*) a most remarkable circumstance in regard to these crescents. If a drop of blood was drawn and examined under the microscope, within about 15 minutes the shell of the enclosing corpuscle burst and they swelled, becoming straight, then elliptical, then spherical; next there whipped out from them long narrow, wormlike, motile filaments, technically called flagella, which lashed about among

the surrounding corpuscles, and finally broke away from their parent body, and could be seen wriggling in the microscopic field for more than an hour.

What could these functionless crescents be, and what were these flagella? Might they represent the highest stage in the development of the parasite? But how could the highest stage be one which had no apparent function?

Was the splitting off of these flagella just a breaking up after death of the parasitic body? Might they be some special form, specialized to lead an independent life outside the human body? But if so, they must have some way of exit. How they could get out to lead such a life was a puzzle, and as great a puzzle was, how did they get in again.

At the beginning of the Christian era Varro and Columella very vaguely suggested that malaria was in some way connected with insects which breed in marshes. Lancisi, more than 150 years before there was any knowledge of these plasmodial parasites in the corpuscles, revived this ancient speculation, and even suspected mosquitoes, and gave special study to them. While in 1883 Dr. King wrote a paper in which he gave no fewer than 19 reasons for regarding the mosquito as the probable carrier of the poison. His theory was that the insect sucked the poison from the marsh water and innoculated men with it. This, however, was before Golgi had worked out the life history of the animal parasite, and when ague was supposed to be due simply to a poison introduced into the blood from without.

In 1894 Manson advanced this mosquito theory a step further. He suggested that in malaria, as the motile filaments only appeared after the blood was drawn from the human body, they were a provision for continuing another phrase of its life history outside the human body, and that this other phase in its life history was probably passed in the body of some blood-sucking insect, like a mosquito; that the flagellum was a flagellated spore, derived from the crescent amœbula outside the body; just as the unflagellated spore was derived from the other amœbula inside the body. That as this latter was designed to continue its life in man, so the former was designed to continue its life in some blood-sucking insect. That the parasite had really two hosts, man and the mosquito, and passed two different phases of its life under different circumstances and in different forms, one phase in man, the other phase in the mosquito. But how could the parasite get from the mosquito into man? Manson arranged it thus. When the parasite reached maturity in the body of the insect, within two or three days after a meal of malarial blood, the mosquito died in the marsh, its body decomposed, its spores were disseminated in the water, rose in the marsh miasm, and were inspired, and so communicated the ague.

This theory assumed rather too much, and was too haphazard. It still rested on the old miasmatic doctrine, the inspiring of the poison, and as this poison was now proved to be not a gas but an animal spore, a solid body, its inspiration was less likely and would require quite "a fortuitous concatenation of circumstances."

Just here another worker took up the investigation, Major Ronald Ross, an Indian Army Doctor. He was attracted by this theory of Manson's. But certain experiments were essential to its proof. First to determine whether the theoretic development of the flagellated spore did actually occur in the body of the mosquito. In 1895 he allowed mosquitoes of the genus *Culex* and *Stegomyia* to bite patients who had malaria and then examined their stomach a few minutes afterwards. Here he saw the crescent bodies give off those motile filaments, even more abundantly in the stomach of the insect than in blood drawn from malarial patients; but he could not trace any development of parasites from them; he saw the flagella and lost them, but found nothing else.

Next he fed mosquitoes on malarial blood, but did not kill them until some days afterwards, so as to allow time for the parasites to grow and develope; but with no more success. One disadvantage was this, he did not know what to look for. He had no idea what the parasites were like. So he fed a lot of mosquitoes with malarial blood, and compared their tissues with those of mosquitoes not so fed, to see if he could detect any difference; anything which could, by a stretch of imagination, be construed into a parasite; but still without any positive result except this, that, having examined many hundreds of mosquitoes completely, and more than a thousand more or less thoroughly, he learned very accurately what an apparently healthy mosquito was like.

But, see! might not the parasites he sought be actually in the body of the mosquito, although he could not recognize them? And might they not communicate the disease to man? He fed other mosquitoes, therefore, on malarial blood, and let them die after a certain length of time. Then he tried to infect healthy persons with the water in which these dead mosquitoes had decayed, but still with no positive result. Lastly, his assistant surgeon consented to be bitten by mosquitoes fed on malarial blood, so as if possible to infect him; but they did not take. Everything was negative. Manson's theory was not supported in a single circumstance. All this was most disappointing and discouraging. But Ross could not be discouraged and would not be defeated.

Next year he noticed, in another and very malarious district, a different kind of mosquito, with dappled wings, belonging to another genus—*Anopheles*. Some of these he bred from larvæ, so as to know exactly what they had to eat and drink, and fed them on patients whose blood contained malarial crescents. Four days after a meal, examining one of these under the microscope, he found what he had never seen in a mosquito before; certain peculiar roundish cells, projecting from the outer wall of its stomach. On the next day, in another mosquito, fed at the same time, he found similar bodies, but now larger and more definite. Could these possibly be his long-looked-for malarial parasites? How could he decide? In them he recognized granules of melanin pigment. Were not such granules typical of the parasitic bodies in malarial blood. Did they not occur in the amœbula and in their spores? These cells in the mosquito, contain-

ing melanin granules, found on August 20, 1897, he was firmly convinced, were the other stage in the life-history of the parasite of which he was in search.

Why, then, had he not found these pigmented bodies before in some of the hundreds of mosquitoes previously examined?

Had he failed to see them though they were there? No. Had he seen them, but taken no notice of them, not recognizing what they were? No. Why had he not found them? Because they were not there! And Why? He had been experimenting with the wrong sort of mosquito.

These parasites cannot develope in any genus of mosquito, but only in some. *Culex* and *Stegomyia*, of which he had examined hundreds, could not harbour them. *Anopheles* was its definite host, and here he found the typical melanin-charged corpuscles in the very first insect examined.

Real progress had been made. Ross had found the malarial parasite in the mosquito, derived from the blood of a malarial patient.

While Ross was prosecuting these investigations, another worker, MacCullum, in America, examining human malarial blood under the microscope, had seen the motile filament separate from its crescent body, and, after lashing about in the blood, approach a somewhat larger crescent body, enter it and become lost in and incorporated with it, after which distinct changes occurred in this larger body.

What did this mean? Well, Manson was acute enough to see. The motile filament was not, as he had at first thought, a spore, a flagellated spore to start as it was, and by itself, in the body of the mosquito host, spore formation, and reproduction by sporulation; but it was the male element in sexual reproduction. In a flower, pollen from the anther, the male element, enters the pistil and fertilizes its ovule, and produces a seed for the reproduction of a plant. So this motile filament, separated from the male crescent, comes into contact with the female crescent and fertilizes it, and forms a zygote for reproduction of the malarial parasite.

MacCullum did not know what became of his fertilized crescent, where it could live and develope; but Manson, acquainted with Ross's discoveries, saw at once that it was no other than the spheroidal cell containing melanin pigment, on the outer wall of the mosquito's stomach. In man, the life cycle was asexual, reproduction by division and spore formation; but in the mosquito the cycle was sexual; in its stomach the male flagella fertilized the female crescent, formed what is called a zygote, and so sexually reproduced the parasite in the body of the insect. This was a flash of genius, a scientific inspiration.

But granting all this, a question was still unsolved, how did the parasites get out of the mosquito into man, so as to keep in continual progression this alternation of generations.

Ronald Ross next addressed himself to this enquiry. He had been shifted to Calcutta for the special duty of prosecuting these investigations. But the natives were too fearful of plague inoculations to allow him to experiment on them. He had therefore to change his material.

Birds there get malaria and harbour a parasite, and a species of mosquito is its definitive host, so he worked with this. In this mosquito he found the zygotes, the ovules fertilized by the flagella, on the outside of the stomach projecting into its body-cavity, where is its blood.

He saw how they grew larger, developed a more definite capsule, and divided up into a dozen cysts or bags, in each of which were formed a large number of thread-like bodies or blasts. The capsule was found to burst, the blast threads were shed into the body-cavity, and were carried by its blood all over its system. And here is the specially momentous matter, many of them entered its salivary glands. Now, the salivary glands of the mosquito have a duct which passes along the middle stylet or "lancet" of the proboscis, and opens at its end. When it bites, its saliva passes into the wound. In a malaria-infested mosquito, when it bites a man, the blasts in these glands might pass with the saliva into the wound, and so into the human circulation, where they could attach themselves to the blood corpuscles and start the asexual sporulation, which Golgi first described.

Ross had next to prove this transference from the mosquito to the bird. He infected mosquitoes by feeding them on sparrows infested with malaria, and after a week found the blasts in the salivary glands of his mosquitoes. The rest of his infected mosquitos he now allowed to bite healthy sparrows; 22 out of 28 of these sparrows, within eight days, showed the parasites in their blood corpuscles, and, as time passed, these were found to be more numerous, proving their increase by sporulation in their hosts; and when the sparrows were killed there was the typical pigment in their organs. Other sparrows, control sparrows as they are called, not bitten by mosquitoes, showed no parasites and no pigment. Ross had thus demonstrated how the parasite got out of the mosquito and into man, not as Manson thought by dying and disintegrating in a marsh and then being drunk or breathed in, but by escaping through the proboscis of the mosquito in the act of feeding.

It is true this later work had been done with bird malaria. But Italian experimenters were soon able to demonstrate just the same biological course in men and their mosquitoes. They gave mosquitoes malaria by feeding them not on sparrows, but on malarious men, and gave other men malaria by infecting them from these malarious mosquitoes, and this not in one variety of ague but in all three.

These investigations proved that ague is due to an animal parasite which has two cycles in its history, one in the blood of man, an asexual cycle, where reproduction is by division and spore formation; another in the body of the mosquito, a bisexual cycle, where reproduction is by conjugation of a male element with a female element, and the formation of blasts; that the definitive host is the mosquito, in which it is most highly developed; the intermediary host is man, who is (as we may say) used by the mosquito as a repository for malarial material.

It is rather a humbling reflection that man—noble, supreme man—should be the convenience of the mos-

quito, a dumping-ground for the seeds of its disease, until such time as they may be sown afresh in her lowly economy.

Malaria, therefore, does not come, as we formerly thought, from the water of the marsh, nor the effluvia which arises from it, but from the mosquito, which lives around the marsh and lays her eggs upon its water, and whose larvæ live in it, and out of which comes the mosquito free from all disease, until she sucks the blood of an infected man, and then she becomes a menace and a scourge. I call the mosquito "she" because only the female is a blood-sucker, the innocent male is a vegetarian.

But have not I said rather more than has been proven? Do we know that the poison spores are not in the air, and are not breathed in with the miasm? We can breathe in smallpox poison as well as be inoculated with it. Why not malaria?

To determine this point Manson carried out a further experiment. The Roman Campagna, an area around the Italian capital, is notoriously malarial, especially at one season of the year. A wooden hut was prepared in England, and erected in the Campagna. This was absolutely mosquito proof, with wire screens to the doors and windows, and mosquito curtains to the beds. Here two well-known British malaria workers and three men lived for four months, through the unhealthiest part of the season. They went out of the house during the day, but not until after sunrise, after the mosquitoes had gone to bed, and they returned to their hut before sunset, before the mosquitoes got up.

They breathed the air of the district as did the workers in the fields around them. But while these contracted the complaint as usual, the men who lived in the hut showed no sign of it, and returned to England well, proving that the air of malarial regions can be breathed with impunity.

Then to demonstrate beyond the shadow of a doubt its communicability by the bite of the insect, anopheles, after being fed in Italy on benign tertian fever patients, were taken in little cages, as canary birds might be, to London. Here they were refreshed by a meal of human blood provided by two gentlemen who voluntarily made the sacrifice in the interests of science, one being Dr. P. Thorburn Manson, the son of Dr. Patrick Manson. Both of them, after the proper incubation period, had their ague fits, and malarial parasites were demonstrated under the microscope in their red blood corpuscles. When everybody was satisfied, including themselves, they took their prescribed doses of quinine, to kill the parasite, and they were cured.

The hut experiment proved that breathing marsh air apart from mosquito bites could not induce malaria, and the transported mosquitoes proved that their bite, without any marsh miasm, would give malaria.

How interesting—more, how fascinating—may we not say romantic, is the story of the elucidation of this disease.

Such a staff of searchers hunting among the tissues of thousands of insects, working year after year—so industrious, so persevering, acute, determined, undaunted by disappointment, or discouragement, returning again and again to their quest, after it had been stopped by various difficulties or the routine duties of their life, urged on by the scientific instinct, the spring of all our true progress.

The Value of it all.

An aborigine from the West Coast of South Australia was taken round our museum to interest and if possible please him. He was shown the animals, the shells, and the minerals, and various objects of which we are all so proud. The man, with a contemptuous wave of his hand, and a sneer on his dusky face, muttered: "What for mucka; chuck 'em away?" The test of their value with him was their immediate utility. And perhaps in some of our minds there remains sufficient of this aboriginal utilitarianism to lead us to ask: "What is the practical outcome of this hardly-won biological knowledge, this intricate story of the microscopic parasite in the mosquito? How much better off, if any, are we for it all?"

Statistics in malarious countries reveal infection of one-third of their population annually by ague, so that within three years every inhabitant practically has been down with it. In India alone the average yearly mortality from ague is officially estimated at nearly one and a half millions, a number considerably increased during years when it is epidemic. How many millions must succumb to it annually the world over? For it occurs in all tropical countries, and during the hot months in most temperate climates. Tanner, in his *Practice of Medicine* (Vol. 1, p. 258), writes: "200 years ago, when the soil round London was neither drained nor cultivated, and when the marshes of Cambridgeshire and Lincolnshire were covered during some months of every year by immense clouds of cranes (Macaulay), ague was a most fatal disease in England. The tertian form was the cause of death to James I., in London. When told by his courtiers that "an ague in the spring is physic for a king," James answered that the proverb only applied to a young king. "Oliver Cromwell died from ague at Somerset House, after disregarding the advice of his physician." Of course, even the Great Protector should have remembered the doctor was his Great Protector, always to be obeyed.

Now, what use can be made of all this acquired knowledge?

Well, we will see.

We know that malaria is due solely to mosquitoes. No one ever contracted the disease but from them. No mosquitoes would mean no malaria. To prevent malaria kill the mosquitoes. This is the enemy on which war must be waged.

But how can we ever hope to destroy all mosquitoes? We need not try. For now we know all are not dangerous, only some kinds. Ross found out that *Culex* and *Stegomyia* cannot harbour the parasite, and are innocuous. *Anopheles* is the culprit. Then *Anopheles* only need be destroyed. *Delenda est Anopheles.*

But how can we identify this enemy? How can we tell *Anopheles* from *Culex*? We know her at once.

1. By her personal appearance; she has long palpi, instead of short, and her wings are spotted or dappled instead of plain grey.

2. By her attitude; see her resting on the wall, her body stands at an angle of about 45°, nearly in the same line as her front legs, and all six legs are used, while *Culex* holds her body parallel to the wall with her hind legs projecting up behind her back.

3. By her eggs. *Anopheles* lays on the water, single eggs. *Culex* makes a raft of eggs like a little catamaran. Have you never tried in vain to sink them? I have, as a boy, many a time.

4. By her larvæ. These eggs in from two to three days at ordinary summer temperature hatch out their larvæ, what we used to call "wrigglers," or "polliwogs." Though they live in the water they breathe air, and have to spend a great part of their time at the surface, in order that their respiratory aperture may open into the atmosphere. Now in *Anopheles* the breathing holes, of which there are several, are disposed along the back, hence its larvæ lie parallel with the surface. *Culex* has one breathing hole at the end of a tube near its tail, so it lies head downwards, nearly vertically to the surface. Their movements also are different. *Anopheles* wriggles itself backwards at the surface, while *Culex* wriggles from the surface down into the depths at pleasure. How often have we watched them more than half a century ago in the water barrels in the backyard, filled by the old water cart once or twice a week from the River Torrens, before ever Adelaide had such a convenience as a reservoir. We need not bother about *Culex* then; all we have to do is to annihilate *Anopheles*. This limits somewhat the area of our conflict. *Delenda est Anopheles.*

But we surely cannot hope to annihilate the mosquito fleet even of *Anopheles*, when on the wing. Its units are too lively and too multitudinous. True! Then kill them in their infancy, before they can fly, in their larval state. But these minute wrigglers would be just as hard to catch. Then kill them without catching them. How? As Othello did Desdemona. Smother them. They must breathe air. Put a film of kerosene or paraffin on the surface, and when they come up to breathe there will be no air, but only oil, and they will suffocate and die.

But will not even this be rather a large contract, if a whole marsh has to be kept so oiled? Yes; but *Anopheles* does not frequent large marshes or mangrove swamps, but only small areas of water. If extensive, but not too large to breed *Anopheles*, drain them. If not so large as to demand this treatment, they can be filled up with earth, and the ground levelled and graded. But not even every ditch and pond and pool will breed them. The time from the laying of the egg until the mosquito emerges from the pupa, is about a month; any pool which will dry up in less than a month, or any pond which is scoured out at less intervals than a month will yield no mosquitoes, because the eggs, larvæ or pupæ will be desiccated, or will be washed out into rivers or the sea. Any waterhole which is inhabited by small fish will not yield them; the fish will eat the larvæ. Any ditch which does not contain certain water-weeds on which the larvæ feed, will yield none, the larvæ will starve; while those containing other water-weeds (such as species of *Lemna*), which poison them, or *Anacharis alsinatrum* (the water pest), which cover the surface and suffocates them, will yield none.

But how about water-tanks and tubs, and empty tins, and clefts of trees in which rain can lodge. In these mosquitoes abound, but it is *Culex*, not *Anopheles*. Only once was this kind found by Ross in any such collection of water, hence no necessity exists to bother about these in order to eradicate malaria. If we locate the enemy accurately, their destruction is not nearly so formidable an undertaking as at first sight might appear.

But it may be impossible to drain marshes, and fill all ditches, and oil all ponds and puddles, and kill the mosquitoes. It may be too costly. Can anything else be done? Certainly. Beat a masterly retreat from the enemy. Mosquitoes are only infective when they bite, prevent them from biting, and they cannot poison. Keep as far away from them as possible. Let all houses, wherever practicable, be at such a distance from their breeding places, that they will not cross the intervening space. It is said the mosquito rarely strays from the place where she was hatched more than a few yards, quite exceptionally beyond half a mile.

So, too, it is well to build on the windward side of a marsh, as "she may be blown some distance by gentle winds," but usually, "so soon as even a moderate breeze springs up she seeks shelter in bush or house or cranny."

It is safer, too, to build the dwelling at a considerable height above the level of the marsh, for "She is a timid and feeble flyer, seldom rising high above the ground."

Then prevent attacks of the enemy. Make houses as mosquito-proof as possible, by means of brass or nickel wire screens at all doors, windows, or openings of any kind, so as to exclude them altogether.

And as a further precaution, sleep under mosquito netting, so arranged over and around the bed as to keep her away, and yet permit free movement of air. Then you can lie awake, and enjoy her bagpipe strains in the frenzy of her tantalization, or go to sleep in safety.

Next, cut off the enemy's supplies.

As far as is known the parasite of human malaria is not harboured by any other animal but man. The mosquito must get from him her infective material. Prevent her.

Let patients with malaria be cured with all speed, then their blood can supply no poison. Let them be treated adequately and systematically with quinine, and let every relapse be an indication for immediately renewed dosage.

And until this cure is complete, let all infected persons be isolated in mosquito-proof houses and beds, so that the insect cannot reach them to get her meal of infected blood.

This is of special importance in a country like our own, which is free from endemic malaria, but to which malaria patients are certain to come from malarial climates, especially now that our Commonwealth has political control of several such districts.

A case of tertian ague has quite recently been reported in a man resident for five years at Gosford, New South Wales, a place previously quite free, as far as is known, from this disease.

When patients come to South Australia in greater numbers, if we should have *Anopheles* here, and it has been affirmed and recorded, we may acquire the disease, unless we diagnose and cure as speedily as possible.

This accurate biological knowledge of the parasite and the mosquito directs our efforts at prevention with an absolute certainty.

Now as to Results.

What evidence can we produce of actual benefit derived from the practice of these rational methods of prevention and cure?

Let me cite one instance among many.

Ismailia is a town on the Suez Canal, about midway between Suez and Port Said. Its population is under 6000, yet in 1900 the number of cases of malaria rose to 2250, more than one-third of its population. In 1902 the Suez Canal Company, which has control of the town, commenced its anti-malarial campaign, by drainage and kerosene and by treating all cases with cinchona. The cases fell from 1548 in 1902 to 37 in 1905, and all these 37 cases were relapses among patients previously infected, not one fresh case was recorded; so that the medical officers of the Company could report that malaria had practically disappeared from Ismailia, at a cost of no more than £1000 a year, or three and fourpence a head.

Is not this a triumph? And others equally striking could be cited, but time will not permit.

But the benefits accruing from the work done in reference to malaria and the discoveries made with regard to the part played by mosquitoes are not to be estimated simply by the lessened mortality from this disease. These investigations have opened up a new field and a most extensive one for enquiry as to insect-borne disease in general, and many other important results have accrued.

Sleeping sickness, which is decimating whole regions in Africa, has been proved to be due to a parasite in the blood called the *Trypanosome*, which has as its definitive host a tse-tse fly, the *Glossina palpalis*.

Yellow fever, that fatal epidemic scourge in several countries bordering on the Atlantic, the poison or parasite of which is still unknown, has been proved to be carried directly from man to man by another mosquito, the *Stegomyia fasciata*, which breeds in stagnant artificial collections of water round houses. This discovery, though quite recent, has saved thousands, tens of thousands already. Let me quote from a recent article:—

"When the French were endeavouring to construct the Panama Canal in the middle of the last century, they lost from disease in five years 11 out of 16 of their entire working force. Think of it, between 60 and 70%. Of 24 Sisters of Charity 20 died of yellow fever, and of 17 engineers 16 died. To-day the canal zone of the Isthmus of Panama has a lower total death rate than any large city in the United States" (*Sunday at Home*, 1915, p. 539).

Dengue fever, which at times is very widely epidemic in Queensland, is also attributed to the mosquito.

So again the *plague*, which has been responsible for such enormous mortality in the East, and sometimes in Europe, is attributed now to a bacillus carried by a flea in the fur of a rat, and the destruction of these rodents and thus of the rat-flea is indicated as the rational method of fighting this dread complaint, and has been wonderfully successful.

Leprosy, too, which so many of our fellow-creatures contract to spend miserable lives of disfigurement, deformity and disability, is due to a bacillus, conveyed most likely by the bed bug.

How romantic is this comparatively novel discovery that our blood at times swarms with parasitic animals, now with one kind, now with another, causing as many different complaints, dengue fever, yellow fever, malaria, filaria; and different species of each animal giving us as many varieties of each complaint, as in the three kinds of malaria, and several kinds of filaria.

That the annoying mosquito, whom we have been accustomed to laugh at, is responsible for them all, and his trivial bite is the method of his quite innocent crime against our health.

It is almost beyond belief.

How hopeful such discoveries make us, that by means eminently rational, and practically simple, we may rid ourselves of these insect pests, and so protect ourselves against the inroads of the plagues they carry.

And how encouraging it is to all workers in scientific fields. Every accurate observation, every new fact recorded, every correct deduction is of value, though its immediate utility may be unseen; the little which one man may do, makes it possible for the next to do more, and may be linked up with facts or truths with which it had no apparent relationship. A Frenchman in Africa begins the study, an Italian continues it, a Britisher in India elaborates it, an American expands it, an Englishman from China confirms it, until, thanks to the catholicity of science, the work is complete to the honour and for the benefit of the several nations of the world.

Sir William Savory, when he lectured to us at St. Bartholomew's Hospital, in his sparkling and eloquent style, used to fill us with gratification and pride, as he recounted the discoveries of the master minds who are the ornament of our profession. Then Sir James Paget, in his quiet way, in purest and simplest Saxon, pointed out how much was still unknown and what riddles remained unsolved, and fired us with a desire to help in the progress of our intricate science, and our philanthropic art.

My desire is this, without the oratory of either, to exert in modest degree the influence of both, and by referring to the marvellous researches of the past, not only glorify our noble profession, and make us proud and pleased, but stimulate to earnest work upon the urgent problems of the present, which

possess an equal romance, will yield an equal scientific satisfaction to earnest workers, and prove of equal benefit to suffering humanity.

Reports of Cases.

A CASE OF ATROPHY OF THE CHOROID IN A BOY OF FIFTEEN.

By L. G. Davidson, M.B.,
Sydney.

E.T., aged 15 years, was referred to me last August for a slight error of refraction by Dr. A. E. Perkins. His vision was $^{6}/_{6}$ with his cylindrical correction (+ 1 D cyl. axis H). He was the second eldest of five children, all boys. He was a sturdy-looking lad, tall for his age, and of fair complexion. His brothers were all healthy, and the family history was good. There was no history of any previous illness, except measles and a sore throat twelve months ago. As he had no eye symptoms, his parents rather objected to any examination of his vision. He had no trace of inherited syphilis. The cornea, examined by the corneal loupe, was healthy and the iris and vitreous in each eye were free from morbid changes. Routine opthalmoscopic examination showed an interesting pathological condition of the choroid at the periphery, which I will describe for the benefit of those interested in the use of the ophthalmoscope in general medicine.

Cases of disease of the choroid, when due to a constitutional cause, should be taken in hand by the physician. Syphilis and tubercle are the most important ætiological factors, and it would be a good plan to submit every child, who had indefinite symptoms of illness, to an ophthalmoscopic examination, especially of the periphery of the fundus and with the pupil dilated with a drop of cocaine or homatropine. Areas of depigmentation due to inherited syphilis are sometimes found at the extreme periphery and would perhaps escape observation if examined with a small pupil. The type of fundus observed in these atrophic areas varies according to the degree of wasting of the choroidal tunic. The tesselated type is seen when the morbid changes are limited to the pigment and capillary layers. When the pigment in the stroma of the choroid is also attacked, a more or less typical albinotic fundus is seen, according as the atrophy of the pigment is superficial or deep. In the former case the choroidal vessels will be seen on a dark background, and in the latter on a yellowish-white background, which is the exposed sclera. Sometimes it is not easy to decide offhand whether such an albinotic area is physiological or pathological. The complexion and age of the patient must be taken into account, and the area carefully compared with the rest of the fundus.

Duane remarks that "in infants large areas of the fundus are often albinotic. They are found particularly at the periphery, and this tendency to semi-albinism in the periphery may persist even in adult life."

If the change be pathological, pigment accumulation in some form will be found in the immediate neighbourhood of the area. In the case under consideration, the pigment was in the form of round granules, about the size of a pin's head, scattered along the course of the exposed vessels of the *lamina vasculosa*. There were evidently some atrophic changes in the pigment of the intervascular spaces in this lad, for the area was decidedly albinotic in character.

Ophthalmoscopic Examination.—In the right eye, a well-defined, limited luminous area was seen in the extreme upper periphery. It was in sharp contrast with the rest of the fundus, which was of the ordinary dark red colour, and was due to the reflection of the white sclera through the partially atrophied choroidal tunic. The large vessels of the choroid were exposed in this area, and could be studied in detail, in their finest ramifications, as far as the ophthalmoscopic visual field allowed, and were seen to be quite free from any morbid change. A few dark brown pigment granules, about the size of a pin's head, were thinly distributed along the course of the vessels. The scantiness of the pigment accumulation was very noticeable. In the mid-periphery of the upper and inner quadrant of the fundus, some half-dozen smaller depigmented spots were observed. These spots were fresh-looking, and the largest one, formed by the fusion of two smaller ones, was about the size of a papilla, and was irregularly crescentic in shape. In the upper part of this patch, the pathological change was limited to the pigment epithelium, while below the chorio-capillaries had also disappeared. In this spot the superficial and deeper atrophic processes could be observed side by side. In the lower part, the nutritional layer having disappeared, the hexagonal cells had lost their blood supply and had been shed, while in the upper part the pigment epithelium was being gradually deprived of its pigment by some slowly-acting process of disease. In its lower part two or three vertically-arranged choroidal vessels were exposed. The superior nasal branch of the retinal artery crossed over these exposed vessels, its darker red colour contrasting with the lighter pink of the vessels of the *lamina vasculosa*. This part of the patch was partly surrounded by a slender hyperæmic zone, and the artery in crossing appeared to dip to a slightly lower level.

The other patches were about one-quarter papilla in size. These spots were of a paler red than the rest of the fundus, were rounded in shape, had a soft and inconspicuous outline, and were encircled by a scarcely observable zone of pigment. The dark appearance in the centre of some of them seemed to have been due to the insufficient removal of pigment rather than to any accumulation of it. At the edges of some of these spots and definitely outside of them the pigment had accumulated in the form of 20 to 25 little granules, about the size of a pin's head, which were arranged in small groups of six or seven. It was difficult to say whether the pigment granules were in the choroid or in the retina proper. There was no pathological change in the macula, papilla, or retinal vessels. A similar area of diffuse depigmentation was observed in the left eye, occupying the extreme upper periphery, but there were no smaller disseminated spots and no pigment granules. Looking at the ophthalmoscopic appearances in the left eye alone, and taking into consideration the age and complexion of the boy, one might have regarded this area as due to partial albinism. A single scotoma existed in the right visual field, corresponding to the position of the larger of the small patches, and there was slight peripheral contraction of both fields.

Remarks.—One would have expected to find, especially as the boy was 15, some old, completely atrophic patches, with a deep collar of pigment and showing the white sclera at the bottom of them, if the disease had been due to hereditary syphilis. The spots were fresh-looking, however, and the pigmentation scanty, so a milder morbific process than that of syphilis was suggested. Tubercle of the choroid is regarded as secondary to a focus of disease elsewhere, so its early recognition becomes necessary if tuberculin treatment is to be carried out successfully. Tubercle of the choroid may exist as a simple chronic choroiditis, as well as in miliary patches and in a single conglomerate mass. Von Michel remarks "that the spots may be scattered all over the fundus, and no conclusion may be drawn from their shape, as they may be alike in tubercle and syphilis. Smaller miliary patches and larger atrophic areas may be seen, the only difference being in the amount of pigmentation. The spots in tubercle have mostly a delicate border of pigment, or a spot in the centre, and may be entirely without pigment." Festooning of the edges is common in tubercle, from the fusion of the individual foci, whereas in syphilis the spots are discrete. A depigmentation of the choroid, adjacent to the spots, as if some chemical had been poured on it, is also seen in tubercle. Once the diagnosis of choroiditis due to a constitutional cause is made, the Wassermann and tuberculin tests should be utilized. I was unable to get the parents to allow of tuberculin being used subcutaneously as a diagnostic agent, but an examination of the blood carried out at the Board of Health by the Bordet-Gengou reaction was negative. This was the only case in which I found any pathological changes in the fundus,

in an examination of 200 cases of refractive errors in young people of both sexes, recently referred to me. One young man, a returned soldier, who was in a railway collision at Lidcombe on August 1 last, wanted his glasses changed, and was found to have concentric contraction of both visual fields and reversal of the fields for colour. He had accepted twenty-five pounds compensation before I saw him, so that there was no suspicion of simulation.

Reviews.

MATERIA MEDICA.

To bring it into line with the new edition of the British Pharmacopœia, another edition, the sixth, of the now well-known text-book, Ghosh's "Materia Medica,"[1] has had to be issued. The former alphabetical arrangement of the drugs has been abandoned in favour of that according to their pharmacological and therapeutic uses, and this will enhance its value to the medical student. In previous editions of this book rather too much space was taken up with non-official preparations, many of which were rarely used, and these mostly empirically. The editor has wisely deleted many of these, while retaining some of proved value. The grouping of all official preparations in a tabular form, thus placing the *aceta*, *extracta*, *lotiones*, etc., together for the sake of comparison, has much to commend it, and must be an aid to memory for the student. The hints for practical pharmacy and dispensing are valuable, and could be read with advantage by practitioners of medicine. As the book has been written and published in India, a number of useful observations are given on the effects of a hot climate on certain drugs and their preparations, and how to prevent the occurrence of these effects. It is claimed in the preface to the book that opportunity has been taken to revise the text thoroughly and to bring the pharmacological work well up to date. One glaring example of faulty revision may be pointed out. In the section on *Eucalypti oleum* we find "Eucalyptol. syn. cineol, cajuputol," while just above the composition of the oil is given as "(1) Eucalptol . . . being a mixture of (*a*) a terpene called Phellandrene, (*b*) Cymene. (2)A resin (crystallizable) yielding ozone. (3) An oil, cineol, isomeric, with cajuputene hydrate. (4) Tannin." In point of fact, pure eucalyptol or cineol ($C_{10}H_{18}O$) is an oxide, and identical with cajuputol. No mention is here made of dextropinene and lævopinene, which are very important constituents of eucalyptus oils. The ozone in the oils is derived from the terpenes, and the resin is the product of the ozonization. Oil of eucalyptus is not a powerful disinfectant, as described in this text-book, its powers in that direction having been shown to be feeble as compared with carbolic acid. On the whole, however, the book appears to have been well revised.

ROUTINE TREATMENT OF SYPHILIS AT ROYAL PRINCE ALFRED HOSPITAL.

By **E. H. Molesworth, M.B., Ch.M. (Syd.),**
Honorary Physician for Diseases of Skin and for Syphilis Clinic, Royal Prince Alfred Hospital, Sydney.

The following, except for a few additions to bring it up to date, is a copy of instructions to resident medical officers to be adopted in treatment of cases of syphilis as a routine in the absence of special orders, which are only given in exceptional circumstances, since the routine here described is found to be the most effective in 90% of cases. The same system is fairly closely followed by me in the treatment of private cases, and is now published in response to several requests from medical officers of newly organized evening clinics, that we should give them the benefit of our experiences at the Royal Prince Alfred Hospital.

(1) *Directions for Preparation of Arsenobenzol Solutions for Intravenous Injection.*

(*a*) Having collected six cases for injection, dissolve the contents of four tubes of the drug in 230 c.cm. of normal saline solution by floating the powder on top of the fluid, which should be slightly above blood temperature, and, shaking thoroughly until it is dissolved. For this purpose a 250 c.cm. graduated cylinder, glass-stoppered, has been found the most suitable container.

(*b*) Add 22 drops of 15% NaOH solution for each tube of arsenobenzol, and if the precipitate be not completely redissolved add NaOH until clearing occurs. Then add saline solution to make the volume up to 240 c.cm. This will be found to be quicker and more convenient than dissolving each tube separately, and there is no possible objection since the whole of the solution is to be used up in half an hour.

(*c*) Pour out into sterilized flasks (filtering through three or four layers of gauze) 30, 40, 50 or 60 c.cm. of this solution, according as a dose of grm. 0.3, 0.4, 0.5, or 0.6 is required.

(*d*) Dilute the contents of these flasks up to about 100 c.cm.

(*e*) Using a two way instillation apparatus with a Y-shaped glass junction, drive all the air out of the rubber tubes by running saline solution backwards and forwards from one container to the other, and out of the distal end of the tubing.

(*f*) After clamping, fill the small container with saline solution and the larger one with the contents of one of the flasks.

(*g*) Affix the needle and allow a little saline solution to run through, to be sure that the lumen of the needle is clear.

(2) *Technique of Injection.*

(*a*) Place a tourniquet round the middle of the upper arm moderately tightly, but not so as to interfere with the arterial blood flow.

(*b*) If the vein is not very prominent, smacking or rubbing the area and causing the patient to clench and open the hand alternately will cause the vein to dilate.

(*c*) The area of operation is prepared by scrubbing with ether or tincture of iodine, though the latter has the disadvantage of making a small vein still less apparent to the eye.

(*d*) Having selected a vein (preferably the median basilic or cephalic), which is firmly bound down to the underlying fascia, and having made sure that the needle is clear, the point is inserted through the skin a little below where it is intended to enter the vein, and in the line of the vein. The needle is held by the butt between forefinger and thumb, the opening of the needle facing upwards. When once the point has penetrated the skin the shaft of the needle is flattened on to the skin surface and the needle pushed on until the point is seen to lie on the front of the vein. The butt is then raised slightly until the point dimples the vein. The needle is then gently pushed on until the point is found to be engaged in the wall of the vein. The butt is then again depressed and the needle pushed on, when it will be felt to pop into the vein. Again push on far enough to ensure the whole of the opening of the needle being in the lumen of the vein, taking care to keep the needle shaft flat on the skin in so doing in order to avoid the possibility of going through the back wall of the vein.

(*e*) Then take off the tourniquet, open the clamp on the saline solution side and be sure that the saline solution flows well. Then clamp off the saline solution and open the arseno-benzol clamp, and allow it to run in until it has just disappeared into the tubing, then add an inch of saline solution to drive the arseno-benzol solution through the needle.

(*f*) Then clamp off everything, remove the needle, pressing a swab on the puncture. Make the patient hold the arm up in the air and keep the swab pressed on for two or three minutes, and then apply collodion or strapping and send the patient home to bed. No patient is to receive any arseno-benzol drug without the authority of the Honorary Medical Officer concerned or of the Medical Superintendent.

The above description applies equally for the preparation of kharsivan or salvarsan, but nonovarseno-benzol, neo-salvarsan and galyl, are to be dissolved in cold dis-

[1] A Treatise on Materia Medica and Therapeutics, including Pharmacy, Dispensing, Pharmacology, and Administration of Drugs, by Rakhaldas Ghosh, I.M.S., Edited by B. H. Deane, I.M.S., and B. N. Ghosh, F.R.F.P.S.; New Edition, 1916. Calcutta: Hilton & Co.; Cr. 8vo., pp. 698. Price, 5s. or 7s. 6d., including postage.

tilled water with no addition of NaHO solution, and may be injected in a concentration of 10 c.cm. with a syringe or small installation apparatus as preferred.

(3) *Routine of Treatment.*

All cases of arseno-benzol injection should be tested for albuminuria before injection, and no patient should be given such treatment when there is any trace of albumin, except in very exceptional circumstances. It must be remembered that not a few syphilitic patients show albuminuria, either as a result of the disease, or as a result of mercurial treatment. In cases where the first is suspected, the patient should be kept on mild to moderate doses of mercury until the urine is clear of albumin. In the second case, he should be given a respite from all treatment until the albumin has quite disappeared before an arseno-benzol drug or even mercury is administered.

No patient over fifty years of age, unless with exceptionally good arteries and low blood pressure, and no patient under that age with high blood pressure or arteriosclerosis should be given an arseno-benzol drug except for a very special reason. No patient under nine stone in weight should be given more than grm. 0.4 arseno-benzol unless he is to be kept in hospital. Patients under eleven stone, but over nine stone, may be given grms 0.5, and men over eleven stone (not fat weight) may occasionally be given grms. 0.6, and be allowed to go home if they live within half an hour's journey from the hospital and are enjoined to go straight home to bed. As a general rule the first dose of arseno-benzol should not exceed grms. 0.4., If well borne, the second dose may be grm. 0.6, and should be given about eight or nine days after the first to avoid symptoms which occasionally occur and resemble those of anaphylaxis. Thereafter the dose should be as large as possible, but not repeated under fourteen days from the previous injection.

The general plan of treatment of cases of syphilis at the Royal Prince Alfred Hospital is as follows:—

Primary cases and secondary cases which have shown the secondary manifestations for not longer than a month are treated in the following manner:—

First treatment—grm. 0.4 arseno-benzol.
Seventh-eighth day—grm. 0.4-0.6 arseno-benzol.
Fourteenth day—0.6 c.cm. mercury cream.
Twenty-first day—grm. 0.4-0.6 arseno-benzol.

This is repeated until the Wassermann reaction of the blood taken 48 hours after the last dose of arseno-benzol is completely negative or a total of grm. 2.4 arseno-benzol has been given.

If the reaction is negative the mercury is continued by weekly injections until 8 or 10 doses have been given, provided no stomatitis or albuminuria occur. The patient is then to be given a respite for two months, at the end of which another dose of arseno-benzol is to be given and the "48 hours" Wassermann test applied. If this be again negative a course of 6-8 mercury injections is given with weekly intervals followed by a spell of three months. At the end of this period another provocative dose of arseno-benzol is given, and the blood again tested 48 hours later. If negative still a course of 6 injections of mercury is given, with fortnightly intervals to complete the treatment.

If, however, at the end of the first course or at any subsequent time the patient shows a positive reaction, his infection is to be regarded as chronic and he is treated as directed for the second category of cases.

This second category consists of cases which have shown secondary lesions for a period longer than a month before coming for treatment. The disease is then to be regarded as well established or chronic, and no idea of abortive treatment is to be entertained except under special circumstances.

In these cases the patients are best treated in the ordinary course of events, thus:—

First day—grm. 0.4 arseno-benzol.
Eighth day—grm. 0.4-0.6 arseno-benzol.
Third, fourth, fifth, sixth and seventh weeks—0.6 c.cm. mercury cream.
Eighth week—grm. 0.4-0.6 arseno-benzol.
Ninth, tenth, eleventh, twelfth, and thirteenth weeks—0.6 c.cm. mercury cream.
Fourteenth week—grm. 0.4-0.6 arseno-benzol.

This is an adaptation of the Rochester Row Military Hospital procedure, the repeated arseno-benzol dose at the beginning being merely to ensure the disappearance of infective lesions.

The patient is then given a respite of two months at the end of the course, a 48 hours' blood test being performed at the beginning and end of the course.

Even if the test at the end proved negative, too much weight is not to be given to the result, since the influence of such a severe course of mercury is very likely to render the reaction temporarily negative.

In any case, at the end of two or three months, a fresh "1-5-1-5-1" course is commenced, thus:—

One injection of arseno-benzol.
Five weekly injections of mercury.
One injection of arseno-benzol.
Five weekly injections of mercury.
One injection of arseno-benzol.

If the test is again negative at the beginning and end of this course, the patient may be regarded as having arrived within reasonable distance of cure.

After a 2-3 months' spell the patient is treated just as a case belonging to the first category when a completely negative reaction is obtained after the initial course, i.e.:—One dose of arseno-benzol followed by a "48 hours'" Wassermann test. If it is again positive he is written down again as chronic, and receives another "1-5-1-5-1" course, but if negative he is merely given a course of 6-8 mercury injection followed by another respite of three months. At the end of this spell he gets another short course like that just described with a blood test 48 hours after the arseno-benzol injection at its commencement. As a general rule in these later courses intervals of a fortnight are allowed between the mercury injections.

Tertiary cases are treated if the general condition permits, by the "1-5-1-5-1" method, but generally require more prolonged treatment, sometimes much more.

Early parasyphilitic cases, or those of moderate duration, provided the usual care to exclude nephritis is taken, may be treated with arseno-benzol drugs. The dose is to be a small one at the beginning (*i.e.* 0.3 grm.), although later grm. 0.4-0.6 may be given if the drug is well borne. In the early stages of the treatment with doses of grm. 0.3 or less, weekly intervals may be allowed, but after two or three injections it is best to give the drug fortnightly.

This treatment may be accompanied by mercurial or iodide treatment; but in order to estimate the full value of the arseno-benzol drug, I personally prefer to give a course of 4-8 injection of arseno-benzol (total amount grm. 2.4) for a beginning. The result in case of tabes of slight or moderate extent has been almost invariably beneficial, but late tabes and general paralysis even in incipient stages, have been little, if at all, benefited.

All cases showing spinal or cerebral symptoms should be, if possible, tested for a Wassermann reaction, the globulin content and the cell content of the cerebro-spinal fluid, at intervals during treatment.

On the whole we find the frequent use of the "48 hours'" Wassermann test the most valuable and reliable check upon the results of treatment, but in order to increase the value of the test we have recently introduced what we have called the "double test." It consists of examining side by side two specimens of blood from the same patient, the first taken immediately before the arseno-benzol provocative injection, the second taken 48 hours later. If the second specimen in hæmolysing lags behind the first to any appreciable extent, even though it ultimately reads completely negative, it is considered positive for the purpose of estimating the necessity of further treatment. It is yet too early to say more than that it promises to be a very useful innovation.

The first Australasian Conference on School Medical Services took place at the Education Department in Sydney, December 18, 19, 20 and 21. The discussions were held at a morning session each day, while the afternoons were taken up by excursions to various places of interest.

The Medical Journal of Australia.

SATURDAY, DECEMBER 23, 1916.

Duty.

The response to the call of the Director-General of Medical Services that every medical man under 60 years of age should apply for a commission in the Australian Army Medical Corps Reserve has exceeded expectation in the area of the Northern Suburbs Medical Association (New South Wales), where the first organized campaign has been planned and carried out. Thanks to the energy of Dr. E. A. R. Bligh, the Honorary Secretary, and to the collaboration of a number of keen members, the Principal Medical Officer of the No. 2 Military District has received applications from nearly every member of this Association. Of a total number of 90 members, 80 are now in the Army Medical Corps, and some of the remaining men have signified their intention of applying for a commission forthwith. On December 9, 1916, a meeting of the South Sydney Medical Association dealt with the same problem. The meeting was attended by 18 members. The local Association comprises 26 members. At this meeting a resolution was passed unanimously inviting every member to apply for a commission in the Reserve. These incidents are but indications of the spirit existing in the medical profession throughout the Commonwealth. Individuals are recognizing that each man has some national duty to perform, and that efficiency in civil and military service in these days depends on an economical utilization of all the available forces. Individual effort, however, will not result in a sufficiently general response. For this reason every local body of doctors should lose no time to press their members into the military service and to complete the preliminary stage of the plan for providing the medical needs of the whole community. The second step consists in the proper classification of the enlisted men, in order that the military authority may have no difficulty in allocating the various tasks to be performed to the most suitable men. No one can tell what the military population will need in the near future in the way of medical service. The larger the number of troops to be examined, supervised and treated, to be accompanied in transports to the front or tendered on their way back in hospital ships, the more will the arrangements for giving medical aid to the civil community be disturbed. By a complete and careful adjustment of the component parts of the medical machine alone can smooth working be guaranteed. The progress made up to the present justifies our hope that the medical profession will set an example to the community in general. Every man has his duty to perform; some at home; others at the front.

SIGHT TESTING.

The Legislative Assembly of Queensland has considered the claims which have been put forward on numerous occasions by the Institute of Ophthalmic Opticians of Queensland, and has given its sanction to a Bill providing for the registration of opticians. The Legislative Council has now to determine whether or not this proposed legislation shall become the law of the State. We have dealt with this subject on previous occasions (see *The Medical Journal of Australia*, August 15, 1914, August 7, 1915, and November 27, 1915). In the present issue we publish a letter which has been addressed by the Council of the Queensland Branch of the British Medical Association to the members of the Legislative Council, setting forth the reasons against the passage of the Bill. It may be assumed that the object of the Bill is to impress on the public that opticians are persons competent to test sight. In the opinion of those best able to judge, this claim cannot be substantiated, and there is ample evidence to prove that the practice of permitting spectacle-makers to prescribe glasses is fraught with danger. The optician has no training in the diseases of the eye and *a fortiori* no knowledge of the diseases of the body which are associated with eye symptoms. This question resolves itself into a specific instance of the danger of the unqualified person being permitted to treat disease. The Legislature in Queensland, as in Western Australia, has admitted this principle in connexion with venereal disease. It is therefore but a small step to apply the principle

generally in the public interest. An understanding of disease depends on a knowledge of the physiology of the body, and without this preliminary training no one can distinguish abnormalities, especially in their early stages, when they are most amenable to therapeutic measures. To treat an organ of the body from a purely mechanical standpoint is to court disaster in every case in which the changes in that organ are associated with some disease process. The business of the optician is to prepare lenses or cylinders and to adjust them to the eyes of persons for whom the glasses have been prescribed by a practitioner trained to do refraction work, to use mydriatics and to recognize when ophthalmic symptoms are due to disease focussed elsewhere. It is at times essential for the correct estimation of an error in refraction to employ atropine or some other mydriatic to dilate the pupil before a satisfactory retinoscopy can be carried out. Opticians should not be allowed to instil a dangerous drug like atropine, and, consequently, even if the eye were to be regarded as a mere mechanical apparatus, he would not have the means at his disposal of ascertaining the degree of mechanical error in need of correction.

The Queensland Branch Council has called attention to the similarity of the position of a pharmaceutical chemist and that of an optician. The pharmacist is not necessarily a chemist, and his knowledge of chemistry other than the elementary chemistry needed for the compounding of drugs is often scant. Similarly, an optician is not necessarily a physicist, and his knowledge of physics is usually limited to a general understanding of the mechanics of the eye and the principles underlying the passage of light rays through lenses. We would urge that in no circumstances is a spectacle-maker qualified to determine whether a person should wear spectacles and what glasses should be used. Like the pharmacist, he has an important function to fulfill, namely, to provide the remedy prescribed by the registered and trained medical practitioner, and to guarantee that this remedy is accurately prepared. The pharmaceutical societies recognize the soundness of the principle that pharmacists should not prescribe, and recommend their members to abstain from this practice. The societies of opticians would be well advised if they would adopt a similar attitude and seek the support of the medical profession rather than alienate its sympathies. The medical profession would always be prepared to advocate a registration of trained opticians, in order that the public might be able to distinguish between the reliable spectacle-maker and the vendor of spectacles.

THE VALUE OF NOTIFICATION.

In the present issue we publish a statistical report of the Commissioner of Health of Western Australia on the returns of notifications of venereal infections since the passing into law of the Health Act. Criticism of the working of the Act at this stage should be undertaken, if at all, with reserve, and due allowance for the fact that its provisions have not yet been in force for 18 months. Moreover, we are still in the dark in regard to many points of great importance, and until full details are available, all attempts to find an explanation for some of the apparent anomalies must fail. We regret to learn from the Commissioner that notification is not carried out efficiently in regard to female patients. The public health authority has now been awakened to its responsibility in connexion with venereal diseases, and a serious attempt is being made at last to apply the known methods of stemming the spread of infections. The Bill now before the Victorian Parliament will soon be passed into the Statute Book, and we shall have three States with legislative power to deal with a perilous scourge. No doubt other health departments will find that public opinion demands similar endeavours on their part, and we may anticipate that in the near future enactments similar to that in Western Australia will form the basis of preventive measures throughout the Commonwealth. For this reason it is eminently desirable to obtain reliable evidence of the value of anonymous notification and the logical corollaries of notification, compulsory treatment by registered practitioners, severe punishment for knowingly spreading infection, and control of infected persons while under treatment. Notification has no importance in the scheme of preventive medicine, unless the knowledge obtained is utilized for the purpose of tracing the sources of infection and cutting them off. We are therefore justified in asking for evidence that the whole, or at least the greater amount, of infection has been notified to the health authority, that a strict control is kept over these sources of infection, and any person passing the infection on to another has been severely dealt with, and that sufferers of both sexes and of all classes of the community are being subjected to treatment on modern lines. The information vouchsafed the public at present in Western Australia is limited to the number of notifications received during the past 15 months, and from this information it would appear that only one person in each 577 of the population is infected.

In Queensland, venereal diseases are notifiable in Brisbane, in three towns and some shires. Venereal

diseases for the purpose of the Act are taken to mean primary and secondary syphilis and gonorrhœa. The notification is anonymous. No person other than a registered medical practitioner may treat a person suffering from venereal disease. When two medical practitioners certify that a person is suffering from a venereal disease and is likely to convey this disease to others, the person may be detained in a hospital or other suitable place for the purpose of receiving treatment. A person who knowingly infects another person with any venereal disease is liable to a penalty not exceeding £50 or to imprisonment for a period not exceeding six months. Prostitutes may be required to submit themselves for examination by medical officers. These provisions were included in the Amending Act of 1911, and the necessary regulations for giving effect to them are dated 1913. It is therefore more advantageous to turn to Queensland for information as to the value of preventive measures based on nameless notification than to grope in the dark among the scraps of information available in the west. Unfortunately, we have no information in regard to some of the most important points in the application of the Act in Queensland. In the year ending June 30, 1914, notifications in respect of 1,090 persons were received by the Commissioner of Public Health. In the following year the number increased to 1,414, and in the year ending June 30, 1916, the Commissioner received notifications concerning 1,946 persons. The distribution of the diseases was as follows:—

	Syphilis.		Gonorrhœa.
	Primary.	Secondary.	
1913-14	122 ..	109 ..	859
1914-1915	213 ..	80 ..	1,121
1915-1916	303 ..	47 ..	1,596

We are informed that the increase since 1913-1914 is ascribable to the aggregation of a large number of men in military camps. No less than 1,105 of the 1,946 notifications in the twelve month from June 30, 1915, to June 30, 1916, were received from the military camps. But even under the conditions obtaining at present, the figures are surprisingly low. The population of Queensland is estimated at 687,010, and consequently the incidence of venereal diseases at present would be 2.8 per 1,000. It has been recorded that the incidence of syphilis in the large European cities is somewhere between 12% and 15%, and that gonorrhœa is four or five times as common. In Queensland, the number of cases of syphilis notified in one year is equivalent to 0.05% of the total population. Is it possible that the notification figures represent anything like the actual number of infections?

Difficulty has been experienced in connexion with the examination of prostitutes, and the Commissioner informs us that the regulation is not working satisfactorily. The number of women found at the examination to be suffering from syphilis or gonorrhœa was 86, and all were committed to the Enthetic Diseases Ward at the Brisbane Hospital. At the Dispensary there were 2,922 attendances for treatment during the year. The Medical Officer gives the numbers as 2,887 males and 35 females; but since the total number of notifications for the whole State during the years 1914-1916 was only 3,360, it is unlikely that nearly 3,000 persons would apply for treatment at one institution in Brisbane, in addition to the prostitutes treated in the Ward at the Brisbane Hospital. It is therefore impossible to ascertain from the available data the percentage of infected persons who were actually subjected to treatment. One fact stands out prominently. This is that the proportion at the Dispensary was approximately one woman to 82½ men. No information is available as to how many persons were prosecuted for having "knowingly infected another person" with a venereal disease. Unless it can be shown that real preventive measures have been taken to check the spread of the infection, it must be admitted that nameless notification is insufficient, and the question of the introductory of notification by name should be considered as a practical problem.

THE AUSTRALIAN UNIVERSITIES.[1]

On the occasion of Commemoration Day at King's College, London, which was celebrated on July 5, 1916, an address on "The Australian Universities" was delivered by Mr. Albert Mansbridge.

He said it was fitting that they should commemorate the Australian Universities and the Australian people, for they were one with us, not only in the never-ending war with ignorance and in the conquest of the unknown, but they fought by our side on land and sea in a war that would end for the freedom of the world. Australia had realized more than we at home, of late at least, that in the full development of each of her citizens, be they rich or poor, lay the necessary condition of the progress of the State. Thus Australia had striven to make equality of educational opportunity a real and abiding characteristic of her life. The construction in Australia of what might be roughly termed democratic educational systems was not wholly due to the influence of the Universities, although their reaction was considerable, but mainly to the fact that Australia was governed largely by working people. Those who aspired to govern realized that their only title to do so lay in the development of mental and spiritual power, fortified by sound knowledge. The most clamant democrat would shrink from the tyranny of an uneducated democracy. Referring to the establishment of Tutorial Classes in Australia, Mr. Mansbridge said it was made incumbent on the University that evening tutorial classes should be held in certain subjects for the benefit of labouring men. The days were early yet for a useful estimate to be made of the influence of the Universities upon Australian life and politics. That it was considerable there could be no doubt, and it was manifest in any great city. Australia had before her unparalleled problems, simply because she had unparalleled opportunities. Her vast spaces, replete with unrealized wealth, cried out for the population she could sustain many times over. Her people would be wise to help. They were developing their education to the uttermost. In and through the Universities and the practical experience of their life they had learned not to rely on the Old World except in the common facts of humanity. Their population they were determined should not be cooped in towns—badly-housed, under-employed, ill-developed. Australia would develope her own institutions out of her own experience, while she drew from all the world to help her. "Australia for the Australians" would not govern her policy. She would ultimately achieve it by disregarding such a cry and by claiming all the world for the Australians.

It is with great regret that we have to record the death, after a long illness, of the wife of Dr. W. Kent Hughes.

[1] Communicated by our London Correspondent.

Abstracts from Current Medical Literature.

MEDICINE.

(223) Vomiting Sickness in Jamaica.

H. Harold Scott (*Annals. Trop. Med. and Parasit.*, April 29, 1916) identifies the condition called "Vomiting Sickness" of Jamaica with acute poisoning by ackee fruit. He has collected notes of 265 alleged cases, and has determined that the diagnosis is not always clear, and that cases of cerebrospinal meningitis, gastritis, malaria, etc., are often confused with this condition. The patients are usually young children, and are nearly always West Indian natives. The symptoms include initial vomiting, which is present in the majority of cases (163 out of 188), secondary vomiting, probably of cerebral origin, convulsions, coma and death. The affection is fatal in between 80% and 90% of the cases, and death takes place on an average 12½ hours after the onset. He has not observed recovery in any case in which convulsions occurred. Fever is rare, and in a typical case is absent. Close investigation revealed the fact that in 16 instances ackee, or an extract of it, was taken at the meal preceding the onset of illness. In seven other cases there was strong probability that ackees were consumed, and in two there was some evidence of this occurrence. In seven cases, while the parents of the patients denied that the children had eaten ackees, it was ascertained that trees bearing ripe fruit were present in the yards of the huts. He conducted certain experiments on guineapigs, rabbits and hares, from which he deduced that alcoholic and ethereal extracts of undeveloped ackee fruit are not poisonous to these animals. An aqueous decoction of unripe and unopened ackee fruit produced symptoms and changes in kittens and puppies similar to those observed in his human patients. Both in his experimental animals and in his patients the pathological changes observed post-mortem consisted of general hyperæmia and a tendency to hæmorrhages in internal organs, fatty metamorphosis in the liver and kidneys, and necrobiotic changes in the epithelium of the liver, kidneys and pancreas. In support of his contention that the condition is an acute intoxication by the unopened or unwholesome fruit of *Blighia sapida*, he states that vomiting sickness is prevalent only during the season when the fruit is ripe, that it is confined to Jamaica, and that rapid and complete recovery ensues in non-fatal cases.

(224) Chorea.

I. A. Abt and A. Levinson have made a statistical study of the records at the Sarah Morris Hospital for Children of 226 cases of chorea (*Journ. of Americ. Med. Assoc.*, November 4, 1916). Chorea represented 2.2% of the affections dealt with at this hospital. Although other observers claim to have seen cases of chorea in infants at birth and during the first year of life, the youngest patient in the authors' series was 3½ years, while the oldest was 18 years. There were twice as many girls as boys. Season did not appear to play any part in determining the disease. The greatest number was observed in December and January, and the smallest number in October. In discussing the question of the relationship between rheumatism and chorea, they recognize that there is considerable presumptive evidence in its favour. On the other hand, a definite history of rheumatism was obtained in only 13 of 143 cases accurately recorded. In 72 cases a mitral insufficiency, in one a myocarditis, in two an aortic insufficiency and in one a double aortic disease occurred as complications. In regard to tonsillitis, a clear history was obtained in about one-third of the patients. No ætiological association between chorea and other infective processes could be elicited, although they state that pertussis, scarlatina and other exanthemata often preceded the attack. Some French authors have recently suggested a casual relationship between syphilis and chorea. The authors found that manifestations of syphilis were present in only two of their cases, and therefore are unable to support this view. Concerning the symptoms of the disease, they point out that localization on one side occurred in 39 cases. In addition to endocarditis as a complication, bronchitis, osteomyelitis, tuberculous glands and psoriasis were noted on a few occasions. Two of their patients died, which yields a mortality of 1%. The duration of the disease varied from one to 369 days, while the majority of patients were improved or cured between two and eight weeks. Recurrences occurred 35 times. One patient had several recurrences, one had four, four had three, and 29 had two. They are strongly of opinion that drugs have no effect on the course of illness, and that arsenic is more likely to do harm than good. They treat their patients by rest in bed and complete isolation, baths and salicylates.

(225) Progressive Subcutaneous Œdema.

D. M. Greig (*Edin. Med. Journ.*, September, 1916) records the case of a feeble-minded, unmarried, nulliparous woman who, at the age of 14, was bitten in Queensland on the left leg by a mosquito. The bite suppurated, and a chronic dermatitis resulted. The author saw her 14 years later. At that time the legs had become very greatly enlarged. The circumference of the left calf was 25 inches, and that of the right calf 17. There was crateriform depression marking the site of the insect bite, surrounded by a ring of induration, with several deep grooves radiating from this area. The patient complained of the weight of the limbs. The swelling decreased after rest in bed, but returned when she assumed the erect position. Lymphangioplasty was carried out by introducing long strands of sterilized silk from the ankles to the groin on the outer and inner sides of the limb, and from the ankle to the gluteal fold posteriorly. Six months later the circumference of the limb was four inches less. The result was therefore not sufficient to justify a repetition on the other side. In discussing the case, the author suggests that an infective lymphatic irritation was set up by the bite, and took the form of a progressive lymphangitis, with obstruction to the lymphatic channels. The tissues become more or less altered in these cases, the fat becomes firmer, the fibrous septa thicker, and the skin altered in texture. A periarteritis may develope, but there is no evidence of any endarteritis.

(226) Late Sequelæ of Framboesia.

Philip Harper places on record three cases of tabes and three of general paralysis of the insane occurring in patients suffering from yaws (*Lancet*, October 14, 1916). He points out that Fijians do not suffer from syphilis, although the whole Fijian population has been infected with yaws. Yaws is not hereditary, and the physical signs are quite distinct from those of syphilis; moreover, the therapeutic tests of syphilis are negative in a case of yaws. He publishes brief records of the cases in sufficient detail to establish the diagnosis.

(227) Hæmoglobinunic Fever.

W. O. Ott (*Journ. Amer. Med. Assoc.*, September 16, 1916) records the case of a man who had been suffering from malaria for some time, and who had been taken ill suddenly with fever, vomiting and hæmaturia. He became deeply jaundice during the following day. His temperature was 104°, and he continued to pass almost black urine in small amounts. The spleen was soft and tender, and reached three inches below the costal margin. The liver was not palpable. Quinine given by the mouth was not retained. As the patient was becoming desperately ill, 10 grains of the bi-hydrochloride of quinine, dissolved in 300 c.cm. of saline solution, were injected intravenously. The infusion was repeated several times. The condition improved, and five days after the onset the urine was clear, the jaundice had almost disappeared, and the spleen had retracted to within 1½ inches of the costal margin. The author points out that several observers would consider it necessary to withhold quinine during an attack of hæmoglobinuria.

(228) Acute Poliomyelitis.

H. B. Thomas pleads for the enforcement of the prevention of fatigue in the treatment of paralysis in the early stages of poliomyelitis (*Journ. Amer. Med. Assoc.*, September 23, 1916). He points out that in the mild type there is often weakness of a group of muscles. When the back muscles are affected there is a tendency towards curvature, and unless proper care is given early fixed scoliosis may appear later. There is often drop-foot, eversion or inversion when lying or sitting, and bending of the knee backwards when standing. There may be dragging of the leg after exercise. In the

severer type of paralysis the physician is inclined to concentrate his attention on the paralysed muscles and to neglect the weakened muscles. Weak and paralysed muscles are, in his opinion, muscles with deranged nerve and blood supply. As these muscles tire easily harm is done by active or passive use, or massage. He therefore counsels the practitioner to avoid fatigue, and to undertreat rather than to overtreat.

NEUROLOGY.

(229) Spinal Concussion (Commotion Médullaire) by Shell Explosion.

It is well-known that paraplegia follows shell concussion, and although in certain cases the symptoms suggest a psychosis, there is no doubt that more often they pointed to organic disease. The case reported by Claude, L. Hermitte and Loyez (*Bull. de la Soc. des Hôp. de Paris*, No. 28, 1915) affords fresh proof that spinal concussion, without apparent injury of the bone, may set up profound lesions in the cord. The chief histological discovery was a softening, affecting the fourth and fifth dorsal segments and consisting of a collection of small ischæmic foci of destruction, around which there was evidence of glial proliferation. The method of Marchi, for displaying myolinic degeneration, brought out a diffuse degeneration of all the nerve fibres; in fact, there were no spinal constituents at these levels, which had not suffered from what might have been called an extensive ischæmia. Further, secondary degeneration had ensued, and was manifest in ascending and descending tracts, above and below the lesion. In cases of concussion by direct spinal shock, in which it had been possible to ascertain the nature of the lesion, hæmatomyelia had been described; in cases of concussion from a distance, lumbar puncture has proved the occurrence of hæmorrhage. In the case recorded, the authors show that concussion can further occasion lesions of an ischæmic nature, in which there is an extensive necrobiosis and reaction of neighbouring tissues. In addition, there was an ependymal lesion all along the cord, but more pronounced below than above the softening. This is regarded as a traumatic hydromyelia due to œdema, and is compared with the ependymitis of hydrocephalus. The neuroglia surrounding the ependymal epithelium, after an intense proliferation, had burst into the central canal, just as it does in certain cases of cerebral ependymitis. In addition, round the canal a proliferation of neuroglia fibrils had arisen, approaching that seen in syringomyelia. The examination demonstrates therefore that the explosion of a shell can provoke, without injury to the bone, an intense medullary concussion, inducing such profound lesions as circumscribed foci of necrosis, diffuse degeneration of myelinated fibres, and ependymal changes not unlike those of syringomyelia. From the clinical standpoint such a lesion can bring about a symptom-complex indistinguishable from compression myelitis.

(230) Insanity and War.

Since German literature, both medical and general, from the beginning of the war had been full of articles on insanity in relation to the present great struggle, Resch (*Allg. Zeits. f. Psych.*, Vol. LXXII., 1915) has asked himself the question, "Had a war really an influence on the incidence of insanity?" and answers it in the affirmative. The same thing occurs in connexion with great political movements or great catastrophes. The histories of previous wars show that an increase in the number of cases of insanity in the army is to be expected during a war. As causes, there operate, during mobilization, the excitement and uncertainty, the distress of leaving relatives behind, perhaps ill-provided for, with the probability of never seeing them again; while, during the campaign, there are the long marches and overexertion of other sorts, the tension of the attack and that of holding trenches under the fire of the enemy. Upon the officers the strain fell most heavily, for it is no light thing to hold the responsibility for the lives of a number of men and to be forced to make an instant decision as to their movements. Added to this are exposure to the weather and often insufficient or improper food. In the present war the abuse of alcohol and the incidence of epidemic disease has fortunately been reduced to a minimum. Lastly, the influence of psychic infection, as in panics, etc., must not be forgotten. That there is any special form of war psychosis has been denied, and with this view the author's experience has led him to concur. The functional neuroses and exhaustion psychoses seem to play an unusually prominent rôle, but dementia præcox, general paralysis and epilepsy are common enough. The patients seen in military hospitals can be divided into two classes; first, those who have developed mental symptoms during the mobilization, while in training or while in garrison, and those who take part in the campaign. Among the latter, traumatic neuroses are predominant, and in both classes hereditary predisposition to insanity is an important factor. The author is of opinion that at each base hospital there should be some provision for mental cases, until they could be transported to an asylum. The prognosis depends upon timely care and treatment. After the war would come the question of provision for these unfortunates, but it is not thought that there is any need for pessimism as to the probable number of the insane on account of the war. So far, no great increase in accommodation for them has been required.

(231) Intramedullary Tumour of Cervical Cord.

In a case of intramedullary tumour of the cervical cord, recorded by Dercum and Da Costa (*Journ. Nerv. Ment. Dis.*, August, 1916), the initial complaint was vague pain or numbness in the left shoulder, next there was numbness and weakness of the whole of the left arm, and later this spread to the right arm. Next came a feeling of weight over the abdomen, and, finally, one month after the appearance of the initial symptoms, there was complete paraplegia, with loss of sensation up to the level of the second rib. At this time also the intrinsic muscles of both hands showed wasting, the pupils were unequal and the cerebro-spinal fluid had a curious yellow colour, not due to bile salts. A diffuse myelitis was suggested, but the diagnosis of tumour of the cord, probably intramedullary, was deemed justifiable. The processes and laminæ of the seventh cervical and first dorsal vertebræ were removed, and the cord exposed and delicately incised along the left postero-median fissure, when immediately a dark, bluish-red, soft mass began to extrude. After an interval of five days, this was gently teased out. It was an angio-endothelioma, and involved the eight cervical and the first and second dorsal segments. Some return of sensation was noticed 24 hours later, and at the end of two months, when the report closed, sensation was still improving and certain movements of the leg could be made. The case is of value in showing (1) the utility of first incising the cord and waiting some days to allow self-extrusion of the tumour; (2) that an illusory and insignificant pain (that in the arm) may give an important clue in diagnosis, and (3) that xanthochromia of the cerebro-spinal fluid, which has been noted in other cases of tumour of the cord, is important, and specially so in differentiating between spinal tumour and disseminated sclerosis and spinal syphilis.

(232) Werdnig-Hoffmann Early Infantile Progressive Muscular Atrophy.

The patient examined by Bliss (*Journ. Nerv. Ment. Dis.*, August, 1916) was the youngest (a female) in a family of four. Two brothers had died apparently of the same disease (mother's statement). Only the eldest child was healthy. The patient was 25 months old, and up to the age of 10 months seemed normal, in fact, was making attempts to walk, when motor difficulties gradually supervened. Progressively the powers of walking, standing, sitting and crawling were lost. The legs were more affected than the arms. The knee and ankle jerks were absent. The plantar reflex was extensor. No sensory loss could be made out, and the sphincters were under control. The muscles were usually hypotonic, but at times all the limbs became painfully rigid, and would remain so for an hour or more. An electrical examination was not made. Paralysis of deglutition and of speech came on a few weeks before death, which occurred after a prolonged convulsion. There was no autopsy. The writer concludes that the steady progress of the affection, beginning in the second half of the first year of life, and its advance from the lower to the upper extremities and to parts supplied by the bulb justified the diagnosis of the Werdnig-Hoffmann type of atrophy, as described by Batten.

British Medical Association News.

ANNUAL MEETING.

The Annual Meeting of the Queensland Branch was held at the B.M.A. Rooms, Adelaide Street, Brisbane, on December 6, 1916, Dr. W. N. Robertson, the President, in the chair.

Dr. Robertson delivered a presidential address, in which he dealt with the work of the Branch during the year, and reproved some of the members for their want of activity. He also urged the members to apply for a commission in the Australian Army Medical Corps Reserve, and asked those who could arrange to leave their practices to make an attempt to relieve their colleagues who had been at the front for over two years.

The following office-bearers and members of the Council for the year 1917 were elected:—

President: Dr. W. N. Robertson.
Vice-Presidents: Dr. W. F. Taylor and Dr. R. A. Meek.
Honorary Secretary: Dr. J. C. Hemsley.
Honorary Treasurer: Dr. H. Bourne.
Honorary Curator of Library: Dr. A. S. Roe.
Honorary Curator of Museum: Dr. A. J. Turner.
Members of Council: Drs. E. W. Kerr, Scott, A. M. McIntosh, T. R. McKenna, and F. W. T. Page.
Honorary Auditors: Dr. A. B. Carvosso and Dr. C. J. Weedon.

The Annual Report was presented to the meeting and adopted.

Annual Report for the year 1916.

Members at 30th November, 1916, 274; new members, 19; resigned during year, 2; struck off, 1; transferred to this Branch, 3; transferred from this Branch, 5; left State, 5; died, 6. Sixty-three members on active service abroad.

The following meetings were held during the year:—

	Ordinary.	Special.
General Meetings	8 ..	1
Council Meetings	12 ..	4

General Meetings.

December 3, 1915.—Annual meeting; 9 members present. Acting President Dr. Robertson read a few remarks on the year's events. Council's report and Hon. Treasurer's financial statement and election of officers for 1916.

January, 1916.—No meeting.

February 4.—Twenty-three members present. Dinner to country members in camp held at Johnsonian Club. Meeting also held in club after dinner. Dr. Jackson read a paper, "Some Aspects of Immorality and its Results in Egypt." Dr. Taylor moved and Dr. McKenna seconded that the Branch approves of cremation.

March 3.—Eleven members present. Paper by Dr. Connolly, Inglewood, read by Dr. Hemsley, "A Case of Paget's Disease (Osteitis Deformans)."

April 7.—Eleven members present. Paper by Major D. A. Cameron, Harefield Hospital (Military), England, "A Case of Liver Abscess." Paper by Dr. Taylor, "Medical Ethics."

May 5.—Fifteen members present. Paper by Dr. Robertson, "Nasal Headache."

June 2.—Twenty-eight members present. Special meeting called to consider Dr. George's application for membership, he having previously held B.A.F.S. appointment. Resolved to hold application over for three months.

June 2.—Twenty-eight members present. Cases shown. Question of Dr. Hoare starting practice in Brisbane during absence of members on active service, in view of resolution of Council passed in January, 1916, discussed. Sanction given to Dr. Hoare to start practice.

July.—No meeting.

August 4.—Twenty-six members present. Papers by Captain McKillop, "Notes on Some Recent Surgical Cases"; Captain Duhig, "Notes on Cases of Pelliosis Rheumatica," "Respiratory Diseases in Camp"; Captain King Patrick, "Administrative Control of Pulmonary Tuberculosis in Australia."

September 1.—Twenty-two members present. Questions of early closing of hotels and illegal operations were discussed, and copies of resolutions passed were sent to the press, to the State Commandant, to the Premier and to the Six O'Clock Closing League *re* the first question, and to the press, the Premier, the Commissioner of Police, and the Chief Justice *re* the second question. Paper by Dr. C. M. Lilley, "Notes on Cases of Meningitis."

October 6.—Eighteen members present. Motion by Sir David Hardie *re* declining birth-rate in Queensland and advisability of urging the Government to appoint a Commission to consider this important question was discussed. Resolved that the President, the Secretary and Sir David Hardie wait upon the Premier and lay the matter before him and urge him to take action. Paper by Dr. G. L'Estrange, "Consequences of Abnormal Breathing."

November 3.—Fourteen members present. Paper by Dr. J. Lockhart Gibson, "Some Experiences at Lemnos and Abbassia with the 3rd A.G.H."

We have to record with deepest regret the death of Dr. J. D. Buchanan in Egypt in December, 1915, while on active service; Dr. Hammand, Clifton, on active service in Egypt in January, 1916; Dr. Penny, Maryborough, in April, 1916; Dr. Rodger, killed in action in France in July, 1916; Dr. H. F. H. Plant, killed in action in France in August, 1916; and Dr. May, who died in Bundaberg on the 21st November, 1916.

During the year, £41 10s. 6d. was received from members towards the Belgian Doctor's Fund and forwarded to *The Medical Journal of Australia*, who sent it on to Dr. Des Voeux, Hon. Treasurer of the Fund.

At the suggestion of Sir David Hardie, a circular was sent to each member, soliciting funds for the Referendum Campaign. In response to the circular, £19 9s. was received at this office and sent to the Queensland Universal Service League in aid of the Fund.

List of members who are on active service abroad:—

Ahern, E. D., Brisbane
Avery, J. G. Roma
Alcorn, A., Brisbane
Brockway, A. B., Brisbane
Bechtel, F. C., Brisbane
Brown, E. E., Ipswich
Brown, Elizabeth, Rockhampton
Bourne, E. E., Brisbane
Butcher, C. B. D., Pittsworth
Butler, A. G., Brisbane
Cameron, D. A., Brisbane
Cameron, G. H., Brisbane
Clowes, A. S., Brisbane
Cooper, L. V., Brisbane
Conrick, H. V. P., Brisbane
Croll, D. G., Brisbane
Culpin, E., Brisbane
Dixon, G. P., Brisbane
Dods, J. E., Brisbane
Dolman, E. W. F., Gatton
Elwell, L. S., Stanthorpe
Follitt, H. H. B., Bundaberg
Forde, W. G., Childers
Foxton, H. V., Ipswich
Fraser, W. A., Harrisville
Gallagher, M. J., Brisbane
Hardie, J., Brisbane
Henderson, R. L., Crow's Nest
Hill, C. F., Brisbane
Hill, R. P., Isisford
Howard, A. J., Brisbane
Hurrey, H. G., Brisbane
Huxtable, R. B., Charters Towers
Kay, S., Mackay
Kelly, W. R., Charters Towers
Kelsey, A. J., Bowen
Macdonald, J. E. F., Stanthorpe
Macdonald, A. J., Laidley
Macdonald, John, Ipswich
McDowall, V., Laidley
McKillop, A., Dalby
McLean, J. B., Brisbane
McReddie, P. G., St. George
Marks, Alex., Brisbane
Mansfield, T. M., Brisbane
Meyers, E. S., Brisbane
Murphy, J. A. R., Brisbane
Morlet, J., Brisbane
Nisbet, A. T. H., Townsville
Power, J. J., Brisbane
Quilty, W. D., Brisbane
Reye, A. J., Brisbane
Ross, T. G., Townsville
Russell, E., Stanthorpe
Sale, J. G., Ilfracome
Smyth, J. S., Warwick
Sutton, A., Brisbane
Sutton, M. G., Brisbane
Tucker, C. E., Friezland
Thomson, E. G., Rockhampton
Tilling, H. W., Goondiwindi
Vernon, G. H., Winton
Wooster, F. C., Rockhampton

Active service at home:—

Dr. Douglas
Dr. McIntosh
Dr. Harding
Dr. McKillop
Dr. Kerwin
Dr. MacDonnell

During the year the following members returned from active service:—

Dr. Ahearne, Townsville
Dr. Anderson, Goondiwindi
Dr. Bridgman, Pittsworth
Dr. Gilbee Brown, Springsure
Dr. H. C. Garde, Maryborough
Dr. J. L. Gibson, Brisbane
Sir D. Hardie, Brisbane
Dr. Higgins, Wondai
Dr. H. C. C. Shaw, Sydney
Dr. Stewart, Albion

In August last Dr. Ahern, Hon. Secretary, left for active service, and Dr. Hemsley was appointed Acting Hon. Secretary in his stead.

Dr. Robertson presented to the Branch a Presidential Chair, carved and made by himself.

Dr. Love presented a clock, which has been hung in the meeting room, and proves a boon.

In February, Dr. Butler, D.S.O., sent an 18 lb. Turkish shell from Gallipoli, which has been placed in the meeting room, and has been an object of interest to all visitors.

A writing table has been purchased and placed in the room for the convenience of members.

One hundred and twenty shares in The Queensland Medical Land Investment Co., Ltd., were purchased from shareholders wishing to dispose of their shares. At present the Branch holds 430 shares in the Company.

The following donations were received for the Library:—

Dr. Marcia Moray: "What Shall We Eat" and "Sexual Life of Woman."

Dr. Thelander: "Annals of Surgery" for 1912, 1913, 1914, 1915, 1916.

Dr. Hawkes: "International Clinics" for 1905 to date (issued quarterly); "Journal of American Med. Association" for 10 years; "Translations of the Ophthalmological Society of the United Kingdom" for 1899 to date.

Hon. Treasurer's Statement for the year ending 30th November, 1916.

	£	s.	d.
Nov. 23, 1915—			
To Balance	100	4	11
Nov. 30, 1916—			
„ B.M.A., London £251 9 6			
„ *The Medical Journal of Australia* 304 1 4			
„ Smith & Paterson 21 2 9			
„ Petty Cash 25 0 0			
„ Library 10 5 2			
„ Secretary 75 0 0			
„ Refunds 5 14 6			
„ Outstanding Cheque 12 9 9			
„ Shares in Company 60 1 3			
„ Rent, Cleaning, etc. 23 13 0			
„ Museum 2 13 0			
„ Electric Light 14 9 2			
„ Organizer 0 10 0			
„ Writing Table 2 2 0			
„ Telephone 8 18 5			
„ Dinner 11 10 0			
„ Insurance 1 10 0			
„ Exchange and Bank Charge 6 17 4			
	849	6	8
	£949	11	7

	£	s.	d.
Nov. 23, 1915—			
By Balance	121	18	7
Dec. to Nov., 1915-16—			
„ Subscriptions to Branch £598 4 6			
„ Subscriptions to Organization Fund 205 12 6			
„ Subscriptions to *The Medical Journal of Australia* (Members on Active Service, Donated by Council) 12 0 0			
„ Subscriptions to Dinner February 4, 1915 11 12 0			
„ Refund from London *re* Dr. Butler 0 4 0			
	827	13	0
	£949	11	7

Assets.

	£	s.	d.
Government Savings Bank	92	16	10
Subscriptions Owing to Branch	51	17	6
Less—			
Subs. to B.M.A., London £15 3 6			
Subs. to *The Medical Journal of Australia* 14 10 0			
Subs. to Organization Fund 13 12 0			
43 5 6			
Credit Balance in Bank of North Queensland	100	4	11
Invested in Shares in Queensland Medical Land Investment Co., Ltd.	215	0	0
Cash in Hand	5	17	1
	£465	16	4
Belgian Fund collected and sent to N.S.W.	£41	10	6
Referendum Fund collected and sent to Universal Service League	19	9	0

A. B. CARVOSSO, CYRIL F. WEEDON, } Auditors.

H. T. BOURNE, Hon. Treasurer.

The following letter has been addressed by the Council of the Queensland Branch to the members of the Legislative Council:—

BRITISH MEDICAL ASSOCIATION.
Queensland Branch.

British Medical Association Building,
Adelaide Street,
Brisbane, 11th December, 1916.

Sir,—

At a Special Meeting of the Council of the British Medical Association, Queensland Branch, held this afternoon, it was determined to issue the following statement regarding the Opticians' Bill now before the House.

As this matter gravely affects the community at large, my Council hope that it will receive careful consideration by the members.

1. The duty of the profession to move because they are guardians of public health.

2. The Bill harmful because it will create the impression that it is the work of opticians to prescribe glasses, whereas it is not really more their work to prescribe glasses than it is a chemist's work to prescribe medicine.

3. An expert optician's work is to grind lenses and make and fit spectacles, and it is expert work.

4. An optician's relationship to oculists is exactly parallel to the relationship of chemists to all medical men.

5. Neither optician nor chemist should be forbidden by law to do some prescribing; but it would be quite a different matter to register them to do what is really not their work.

6. The presence of opticians in a town does not decrease the work of oculists in that town; it increases it greatly. They are as indispensable to oculists as chemists are.

7. If the eye was a stable optical apparatus, not affected by disease, expert opticians could prescribe spectacles as well as oculists.

8. Below the age of 60 years the eye is not a stable optical apparatus; at all ages it is liable to diseases.

9. In no case is it really safe to prescribe glasses without a previous complete examination of the inside of the eye. This only a highly trained medical man can make and interpret.

10. The more expert opticians are as opticians, and the more experienced, the fewer mistakes will they make.

11. It is the most expert opticians who most frequently refer patients to oculists.

12. A Bill to distinguish between opticians who are really expert in optics and in the making of lenses and spectacles would be an advantage to the public, and would be welcomed by the medical profession. They are, of course, in quite a different category to the itinerant vendor of spectacles.

13. If the Government passes a Bill registering opticians as sight-testers, the Government takes the responsibility of saying it is their work. At present, any person who goes directly to opticians for opinions and work takes the responsibility on himself. If harm results, it is not then the fault of the Government of the people.

14. Many people of all ages suffer from serious disease at the back of the eye, which leads them to seek advice, but which is not at first attended by distinct loss of sight. The sight of some of these would apparently be benefited temporarily by spectacles. If these were supplied by an optician without a thorough examination of the eyes, which he cannot have the knowledge to make and interpret, valuable time would be lost, and brain and other disease in the early stages curable would have gone too far before expert advice would be sought.

15. This applies very specially to tumours of the brain, to kidney disease, to glaucoma and to lead poisoning affecting the eyes of children.

16. Tumours of the brain and also kidney disease are often first diagnosed by an examination of the back of the eye. They both seriously endanger life, and prompt treatment is required.

17. Glaucoma very seriously endangers sight, and if treatment be delayed the sight is lost.

18. Lead poisoning affecting the eyes of children is very common in Queensland, owing to the powdery lead paint on verandah railings. It is attended by squint, which, without a searching examination of the back of the eye, is apt to be taken for the more usual squint, which requires treatment by spectacles. This affection, if recognized in time, is very amenable to treatment. If treatment be delayed, blindness results. A majority of children so affected would be ordered glasses by opticians, and the necessary treatment would be delayed.

Yours faithfully,
J. CAMERON HEMSLEY,
Secretary.

Public Health.

THE HEALTH OF NEW SOUTH WALES.

The following notifications have been recieved by the Department of Public Health, New South Wales, during the week ending December 9, 1916:—

	Metropolitan Combined District. Cs.	Dths.	Hunter River Combined District. Cs.	Dths.	Rest of State. Cs.	Dths.	Total. Cs.	Dths.
Enteric Fever ..	22	2 ..	3	1 ..	23	0 ..	48	3
Scarlatina	55	1 ..	1	0 ..	22	0 ..	78	1
Diphtheria	31	2 ..	2	0 ..	30	0 ..	63	2
C'bro-Sp'l Menin.	3	2 ..	0	0 ..	3	1 ..	6	3
Poliomyelitis ..	0	0 ..	0	0 ..	1	0 ..	1	0
*Pul. Tuberculosis	28	13 ..	1	1 ..	1	1 ..	30	15

One case of variola has been notified from Coonamble on December 11, 1916.

* Notifiable only in the Metropolitan and Hunter River Districts, and, since October 2, 1916, in the Blue Mountain Shire and Katoomba Municipality.

THE HEALTH OF VICTORIA.

The following notifications have been received by the Department of Public Health, Victoria, during the week ending December 10, 1916:—

	Metropolitan. Cs.	Dths.	Rest of State. Cs.	Dths.	Total. Cs.	Dths.
Diphtheria	46	0 ..	27	0 ..	73	0
Scarlatina	16	1 ..	20	0 ..	36	1
Enteric Fever..	2	0 ..	4	0 ..	6	0
Pulmonary Tuberculosis	23	13 ..	4	6 ..	27	19
C'bro-Spinal Meningitis	5	— ..	4	— ..	9	—

INFECTIVE DISEASES IN QUEENSLAND.

The following notifications have been received by the Department of Public Health, Queensland, during the week ending December 9, 1916:—

Disease.	No. of Cases.
Scarlatina	7
Pulmonary Tuberculosis	11
Enteric Fever..	16
Diphtheria	28
Puerperal Fever	2
Ankylostomiasis	7
Erysipelas	6
Cerebro-Spinal Meningitis	1

THE HEALTH OF SOUTH AUSTRALIA.

The following notifications have been received by the Central Board of Health, South Australia, during the week ending December 2, 1916:—

Disease.	Adelaide. Cs.	Dths.	Rest of State. Cs.	Dths.	Totals. Cs.	Dths.
Pertussis	8	1 ..	43	2 ..	51	3
Morbilli	6	0 ..	40	0 ..	46	0
Pulmonary Tuberculosis	3	0 ..	6	7 ..	9	7
Enteric Fever..	0	0 ..	7	0 ..	7	0
Diphtheria	0	4 ..	6	1 ..	6	5
Erysipelas	0	0 ..	2	0 ..	2	0
Scarlatina	1	0 ..	2	0 ..	3	0
C'bro-Spinal Meningitis	0	2 ..	1	0 ..	1	2
Puerperal Fever	0	0 ..	1	1 ..	1	1

THE WESTERN AUSTRALIAN HEALTH ACT, 1915.

We have received the following report from the Commissioner of Public Health of Western Australia, together with an analysis of the notification returns of venereal diseases for the period from June 9 to September 30, 1916.

VENEREAL DISEASES.

In submitting the attached statistics of cases of venereal diseases for the period to the 30th September, 1916, there are certain points which should be emphasized.

In the first place, the form of notification of these cases is quite different from that used for the notification of ordinary infectious cases. With the latter name and address of the patient is given, but with venereal cases no such information is afforded, so that there can be no publicity whatever, so far as the individual affected is concerned. The notification is purely of a statistical nature.

It has been stated that, with anonymous notification the statistics compiled will be erroneous for the reason that in the absence of the names of patients there will be no

opportunity of eliminating from the returns the notifications of cases which have already been notified by some other medical practitioner. This difficulty has been overcome by the insertion of a statement at the foot of the notification form to the effect that "The patient has (or has not) previously been under treatment for the present infection," and the medical man strikes out such words as will render the statement correct for the particular case. Of the 130 cases notified in September, for instance, 29 were indicated as having been "previously under treatment," so that 101 of the cases were to be regarded as being notified for the first time, during that month.

The statistics submitted cover a period of about fifteen weeks. The forms of notification were sent to the medical profession on the 9th June, and the fact that returns have been sent in by over 70 practitioners indicates that the profession is co-operating in the administration of the Act.

The total number of cases notified was 563, of which 181 were of syphilis. While these numbers are large it should be remembered that during the first few weeks, and especially during June and July, the cases already under treatment would be notified, thus materially swelling the total. By the end of September all such cases should have been reported, so that subsequent figures for cases "not previously under treatment" should fairly represent the number of fresh infections.

On the figures for the period under review the proportion of syphilis is higher than has been the experience elsewhere. The recognized proportion is one case of syphilis to five of gonorrhœa, but the figures so far obtained here indicate one of syphilis to two of gonorrhœa. If we take the September figure alone, however, and deduct the cases "previously under treatment" we find that 20 cases of syphilis were notified to 77 of gonorrhœa, a proportion of a little over one to four. The proportion for the period 9th June to 30th September is swollen by the inclusion of "cases under treatment," and would operate against the syphilis figure, seeing that treatment of that disease is more prolonged than in the case of gonorrhœa. In future it is to be hoped that the lesser proportion of one to four will not be exceeded.

One aspect of serious concern is apparent from the statistics, and that is the disproportion between the figures for the two sexes; for, whereas 155 cases of syphilis and 333 of gonorrhœa were notified in males, there were only 26 and 29 cases respectively notified in females. It is impossible to believe that this represents the proportional incidence of these diseases in the sexes, and the only conclusion is that females are much less inclined to seek medical advice. It must be remembered too that gonorrhœa in females in the early stages frequently sets up no marked definite symptoms beyond a discharge which may be mistaken for leucorrhœa. There are, no doubt, many cases of gonorrhœa in females not under medical treatment; such cases incur considerable risk of serious after-effects to themselves, besides probably continuing the spread of infection. How best to cope with this aspect of the question, and how to educate both sexes in regard to the physical risks involved by illicit intercourse and by neglect in obtaining skilled medical attention when any probability of infection makes itself apparent are problems demanding attention.

Table III. gives a summary of the cases notified among the military forces. It will be seen that slightly over one-third of the cases in males occurred among the military community, and that the great majority of these were infected in this State.

Table I.

Statements of Cases Notified, Showing, *inter alia*, the Number Previously Under Treatment.

Disease.	All Cases Notified.			June 9 to July 31.		August.		September.		Total.	
	Males.	Females.	Total.	Cases Notified.	Previously Under Treatment.	Cases Notified.	Previously Under Treatment.	Cases Notified.	Previously Under Treatment.	Cases Notified.	Previously Under Treatment.
Syphilis—											
Primary ..	64	1	65	34	17	21	10	10	4	65	31
Secondary..	48	16	64	45	20	11	8	8	3	64	31
Tertiary ..	40	6	46	28	12	6	5	12	8	46	25
Congenital .	3	3	6	1	—	—	—	5	—	6	—
Tot'l Syphilis	155	26	181	108	49	38	23	35	15	181	87
Gonorrhœa ..	333	29	362	184	83	57	23	91	14	362	120
Chancroid ..	19	1	20	12	6	4	1	4	—	20	7
Total ..	507	56	563	304	138	129	47	130	29	563	214

Table III.

Cases Among the Military Forces, Showing Where Infection Had Been Contracted.

Disease.	Number of Cases Notified.	Infection Contracted in— W.A.	Eastern State.	New Zealand.	Abroad.
Syphilis—					
Primary ..	25	12	9	2	2
Secondary ..	16	12	4	—	—
Tertiary ..	2	2	—	—	—
Congenital ..	—	—	—	—	—
Total Syphilis .	43	26	13	2	2
Gonorrhœa ..	127	123	1	—	3
Chancroid.. ..	5	5	—	—	—
Total	175	154	14	2	5

Note.—The figures shown in this Table are included in the figures given in Tables I. and II.

Table II.

Age and Sex of Cases Notified During Fifteen Weeks Ended 30th September, 1916.

Disease	Under 10 years. M.	F.	10 and under 20. M.	F.	20 and under 30. M.	F.	30 and under 40. M.	F.	40 and under 50. M.	F.	50 and under 60. M.	F.	60 years and over. M.	F.	Total all ages. M.	F.	Grand Total.
Syphilis—																	
Primary ..	—	—	7	1	32	—	17	—	5	—	3	—	—	—	64	1	65
Secondary	—	—	2	4	24	11	14	1	7	—	1	—	—	—	48	16	64
Tertiary ..	—	—	—	—	5	3	20	—	5	2	5	1	5	—	40	6	46
Congenital	—	—	—	1	3	2	—	—	—	—	—	—	—	—	3	3	6
Total Syphilis	—	—	9	6	64	16	51	1	17	2	9	1	5	—	155	26	181
Gonorrhœa	—	2	35	7	160	14	98	5	34	1	4	—	2	—	333	29	362
Chancroid	—	—	1	1	11	—	2	—	4	—	1	—	—	—	19	1	20
Total	—	2	45	14	235	30	151	6	55	3	14	1	7	—	507	56	563

Table IV.
Cases Notified During the Month of October, 1916.

Disease.	Males			Females.	Total Cases Notified.	Previously Under Treatment.
	Civilian.	Military.	Total.			
Syphilis—						
Primary	9	16	25	—	25	4
Secondary	9	1	10	2	12	3
Tertiary	3	—	3	3	6	4
Congenital	1	—	1	—	1	—
Total Syphilis	22	17	39	5	44	11
Gonorrhœa	55	49	104	9	113	22
Chancroid	10	2	12	1	13	4
Granuloma	—	—	—	1	1	—
Total	87	68	155	16	171	37

ANTI-TUBERCULOSIS WORK IN ENGLAND.

We have received the report of the Tuberculosis Medical Officer of the County Borough of Middlesbrough for the year 1915. The Tuberculosis Medical Officer is Dr. H. S. Ellis, at one time a practitioner in Western Australia. He records that 770 cases have been notified during the year, and that over 400 patients were under treatment at the dispensary. When a patient becomes too ill to attend at the dispensary, his usual medical attendant treats him in his own home. The plan on which the medical officer works appears to be as follows:—After notification those patients whose disease is regarded as curable are sent to the sanatorium, when the necessary resistance cannot be built up in the patient's home. An endeavour is made to admit the patients as soon as the slightest signs of infection are detected. Dr. Ellis shows that 65% of those admitted to the sanatorium are enabled to return to their full position in life. Special provisions are made for children, and the machinery of the dispensary is utilized by the School Inspector for diagnosis or treatment. By means of collaboration the detection of tuberculosis in children is facilitated very considerably. It has been found that no less than 11.1 per 1,000 of school children suffer from tuberculosis requiring treatment. When it is consistent with the health of the children, and when there is no danger to others, the little patients are kept at school. It is regarded as of great importance that delicate children should receive as good an education as possible. Special means are adopted to prevent truancy, which would arise if the children were allowed to attend at the dispensary without any check being kept on them. In association with this work there is an eye clinic at which tubercular affections of the eyes are treated with great care. In the case of tuberculosis of the joints and of the lungs open-air schools become a necessity. Dr. Ellis deprecates the practice of sending children of a school age to a sanatorium where no facilities for education exist.

In the campaign against tuberculosis the Medical Officer finds it necessary to take into consideration the number of cases involved, the relative success of the treatment, and the financial responsibilities which are incurred. He assumes that between 60% and 70% of the population have been infected at one time or another. This does not, however, represent the extent of active disease. In Middlesbrough it has been ascertained that approximately 20% of the population suffer from active tuberculosis at some time in their lives, and that 9% of the population die of the disease. It would seem as if about one person in every 100 shows signs of active tuberculosis at any given time. According to the Astor report a population of 5,000 should be provided with one bed in a sanatorium for early cases, and with one bed in an institution for advanced cases. In his district the insured population numbers 42,000, and the total population numbers 127,000. There should therefore be approximately 25 sanatorium and 25 hospital beds. Owing to the war practically no hospital beds have been available. In attempting to ascertain the effect of sanatorium treatment Dr. Ellis has set up a table showing the interval between notification and death in all fatal cases. From this table we learn that 231 persons died of tuberculosis in 1914 within 18 months of notification. Of these 172 died within the first six months. We find that the death-rate is inversely proportional to the length of notification. Practically no deaths occurred in children under 16 who had been notified more than six months. He appends a second table dealing with persons whose disease was notified during 1915. From the data available he concludes that early notification is of distinct value, since the death-rate of those dying within one month of notification is increasing, and that of those dying within six months is decreasing.

An analysis of the expenditure involved in the dispensary scheme reveals the fact that all the early cases can be efficiently treated at a cost of ninepence per head of population. When the Insurance Bill was presented to Parliament it was estimated that 1s. 3d. would be necessary for tuberculosis treatment. He advocates the following order of expenditure: First, the dispensary should be equipped and administered. Next, provision should be made for sanatorium treatment, but this should be reserved for persons whose recovery may be expected within three months. He distinguishes between rest sanatoria and general sanatoria. In the third place, money should be spent on open-air schools. The fourth item of expenditure is directed to the equipment and maintenance of the general sanatorium, at which patients who can recover only after a struggle receive treatment. The last item of expenditure is in his opinion purely humanitarian. It consists in providing hospital accommodation for those who are failing, or who have failed, in the struggle.

The report contains a considerable amount of other information which will become of value in future years. The time that has elapsed since the National Insurance Act became law is not sufficiently long to justify final conclusions being drawn. The evidence which Dr. Ellis adduces is highly suggestive, and it is probable that the co-ordination of the medical inspection of schools, the tuberculosis medical officer, and the general sanitarian will effect much more than would be possible by the unaided endeavours of the medical officer of health. We must, however, be careful not to assume that the facts obtaining and deductions that are justifiable in Great Britain can be translated to Australian conditions. It is recognized that tuberculosis is in some degree associated with overcrowding, and that a marked reduction in the mortality from this disease has been effected in Great Britain by improvements of the housing conditions. The prevalence of poverty runs more or less parallel with the incidence of the disease. Over-crowding, bad housing conditions, and extreme poverty cannot be said to be present in the Commonwealth. As has been pointed out in these columns on numerous occasions, the essentials necessitating the introduction of the national insurance scheme do not exist in Australia. Co-ordination of the various agencies can be achieved in a simpler and more direct manner, and the prophylaxis of tuberculosis does not necessarily entail the adoption of measures found advisable in other countries.

Naval and Military.

The news has been received in Sydney that Captain Roger Forrest Hughes, A.A.M.C., was killed in action on December 12, 1916. The sympathy of the whole medical profession is being extended to our brave colleague's parents, Sir Thomas and Lady Hughes. We hope to publish a short account of his career in an early issue.

We regret to record that Dr. E. R. Paul, a dental surgeon, the brother of Drs. C. Norman Paul and George A. Paul, of Sydney, has been killed in action. Dr. E. R. Paul enlisted as a private in the Australian Imperial Forces in 1915.

Captain C. C. Corlis, A.A.M.C., has been awarded the Military Cross for conspicuous gallantry during the fighting at Pozières.

We learn that Captain W. E. Giblin, of Port Moresby, Papua, who is a member of the Royal Army Medical Corps, has been awarded the Military Cross. Another Royal Army Medical Corps officer who has been awarded the distinction of the Military Cross for conspicuous bravery is Captain R. Welton Hogg. He was a Melbourne University graduate, and after qualifying responded to the call of Sir Alfred Keogh, Director-General of Medical Services, to accept a commission in the Royal Army Medical Corps.

The Minister for Defence announced in the House of Representatives on December 13, 1916, that the casualties

among Australian troops since the beginning of the war numbered 68,694. A considerable number of wounded men had returned to the firing-line. The number of casualties during October and November was 12,426. In the same period 16,588 men have enlisted.

The 250th list of casualties, which was issued on December 14, 1916, contains, among 778 names, the name of one medical officer; Captain R. L. Henderson is reported as being seriously ill. There are no medical officers named in the 251st list of casualties, which was issued on December 15. The 252nd and 253rd lists were issued together on December 19, 1916, and contain no less than 1,351 names. The number of "killed in action" and "died of wounds or other causes" was 237. The only medical man mentioned in the list is Captain H. Rayson, whose name appears under the rubric "seriously ill." From information received subsequently we learn that Captain Rayson is progressing favourably.

The following extracts from the *London Gazette*, dated September 19 and September 26, 1916, have been published in the *Commonwealth of Australia Gazette*, No. 184, under date December 14, 1916:—

His Majesty the King has been graciously pleased to confer the Military Cross on the undermentioned officers and warrant officers in recognition of their gallantry and devotion to duty in the field:—

Australian Imperial Force.

Captain Samuel Charles Fitzpatrick, A.M.C. For conspicuous gallantry and devotion to duty during protracted operations. He dressed wounded in the open under heavy shell fire, and worked continuously for four days with but little rest or sleep.

Captain Joseph Patrick Fogarty, A.M.C. For conspicuous gallantry and devotion to duty in action. He carried out his work among the wounded with utter disregard to his own personal safety. Two brigades owe him a deep debt of gratitude.

Captain George Alcysius Makinson Heydon, A.M.C. For conspicuous gallantry and devotion to duty during protracted operations. For four days he attended the wounded under incessant fire, carrying them to his dressing station when the stretcher bearers had become casualties.

His Majesty the King has been graciously pleased to confer the Military Cross on the undermentioned officers in recognition of their gallantry and devotion to duty in the field:—

Captain Charles Cosgrove, Army Medical Corps. For conspicuous gallantry and devotion to duty in action. He tended the wounded throughout and for many hours after the action. He was frequently under heavy fire, but carried on quite regardless of personal danger.

Captain Keith Harvey Grieve, Army Medical Corps. For conspicuous gallantry and devotion to duty in action. Owing to the battered condition of the front line trenches he was compelled to carry on his work among the wounded in the open. Under very heavy shell fire he showed the greatest coolness and courage. Though joined many hours later by other medical officers, he stuck to his work without rest or sleep.

The following notice has appeared in the *Commonwealth of Australia Gazette* of December 14, 1916:—

Naval Forces of the Commonwealth.

Payment of an Allowance to an Officer.

His Excellency the Governor-General, acting with the advice of the Federal Executive Council, has been pleased to approve of Staff-Surgeon Thomas William Francis, R.A.N.R. (Civilian Medical Officer, Commonwealth Naval Dockyard, Cockatoo Island, Sydney), being paid an allowance at the rate of One Hundred Pounds (£100) per annum, in addition to salary, for extra work involved in connexion with medical attendance on members of the Naval Transport Coaling Battalion. Dated 11th October, 1916.

Special Correspondence.

(By our Special Correspondent.)

LONDON LETTER.

The Rhodes Scholarships at Oxford for Germans.

Mr. Cecil Rhodes, who died in March, 1902, directed his Trustees to establish certain American and Colonial Scholarships at Oxford University, of which he himself was an alumnus. Eighteen months after the execution of his will, Mr. Rhodes added to it the following codicil:—

> This is a further Codicil to my Will. I note the German Emperor has made instruction in English compulsory in German schools. I leave five yearly scholarships at Oxford of £250 per annum to students of German birth, the scholars to be nominated by the German Emperor for the time being. Each scholarship to continue for three years, so that each year after the first three years there will be fifteen scholars. The object is that an understanding between the three Great Powers will render war impossible, and educational relations make the strongest tie.

The American and Colonial scholarships are of an annual value of £300; the difference in value between them and those provided for German students being so arranged in order to meet the greater costs of travel of men coming to Oxford from America and the Colonies. Since 1903, there have come into residence at Oxford annually, 32 Americans, 26 Colonials, and 5 Germans. At present, the 26 Colonial students hail 8 from South Africa, 8 from Canada, 7 from Australia, 1 from Newfoundland, 1 from Bermuda, and one from Jamaica. Each scholarship being for three years, the permanent number of Rhodes Scholars at Oxford has become 189, including 15 Germans.

Mr. Rhodes's hope of an Anglo-American-German league of peace to render war impossible not having been realized, his Trustees desire to abolish the German rights, and divert the scholarships to men of the British Empire. The Trustees are the Earl of Rosebery, Earl Grey, Viscount Milner, Sir Leander Starr Jameson, and Sir Lewis Loyd Mitchell. They have formulated a Bill to revoke the German codicil, which has been already passed by the House of Lords, but has not yet been before the Commons.* It seeks to abolish the German scholarships as from the day war began. The Trustees undertake to establish twelve scholarships of the yearly value of £300 for male students from such Colonies, Dependencies, or places within the British Empire, as the Trustees may from time to time in their discretion determine, in substitution for the German scholarships.

There seems to be some doubt whether the Trustees will succeed in carrying through this interesting piece of legislation, on account of technical legal difficulties. No British subject, however, can fail to sympathize with the object the Trustees have in mind, and it may be confidently surmised that, had the great Cecil Rhodes lived to realize the perfidious character of the Kaiser and the brutal type of *Kultur* of which he has proved himself high-priest, he would, without loss of time after war was declared, have rescinded this codicil and re-adjusted his munificent bequest on lines similar to those which his Trustees now wish to have legalized.

Professor Metchnikoff.

Professor Elias Metchnikoff, the famous bacteriologist, died at the Pasteur Institute in Paris on July 15, 1916, at the age of 71.

He was born at Kharkoff, in Russia, in 1845, and was educated at the Gymnasium and University of that town. In 1870 he was appointed Professor of Zoology at Odessa, and later he became Director of the Odessa Bacteriological Institute.

In 1890 he went to Paris to study under Pasteur, and became Professor at the Pasteur Institute in 1894. He was a Member of the French Academy of Medicine, a Foreign Member of the Royal Society of London, and a Member of the Académie des Sciences. In 1908 he was awarded the Nobel Prize in Medicine.

His most noteworthy work was in connexion with the white corpuscles in human blood, and his investigations led

*This measure has since become law.—Ed.

him to believe that old age was a chronic disease, and that it was within the power of science to arrest physiological waste and thus delay decay. By the irony of fate, though he believed and taught that the proper duration of human life was a century or more, he himself passed into the unknown when only at the beginning of his seventh decade. His views on this subject are set forth in "The Prolongation of Human Life," 1907. Among other works of his were "The Nature of Man," 1903, and "Immunity in Infectious Diseases," 1906.

Professor Metchnikoff was perhaps best known to the general public for his advocacy of the sour milk cure for digestive disorders, to the consumption of which he attributed the remarkable longevity of the Bulgarian peasants.

Metchnikoff was twice married. He was a man of large mind, and possessed in a marked degree both the capacity for taking infinite pains and a brilliant scientific imagination, which at times tempted him to romantic flights that subsequent investigation failed to justify. The whole scientific world will mourn the death of a great and brilliant investigator.

Proceedings of the Australasian Medical Boards.

NEW SOUTH WALES.

The following have been registered under the provisions of "The Medical Act, 1912 and 1915," as duly qualified medical practitioners:—

MacKay, Robert Mitchell, M.B., Bac. Surg., 1914, Univ. Edin.

Reid, Christina Hamilton, M.B., 1908, Bac. Surg., 1909, Univ. Melb.

Smallpage, Edward Stanley, M.B., Mast. Surg., 1916, Univ. Sydney.

Books Received.

SURGICAL OPERATIONS, by K. K. Chatterji, F.R.C.S.I., with a Foreword by Lt.-Col. R. Bird, I.M.S.; 1916. Calcutta: Butterworth & Co. (India), Ltd.; Cr. 8vo., pp. 238. Price, 7s. 6d.

PRACTICAL MEDICINE SERIES: VOLUME VI., GENERAL MEDICINE, under the general editorial charge of Charles L. Mix, A.M., M.D.; edited by Frank Billings, M.S., M.D., assisted by Burrell O. Raulston, A.B., M.D.; 1916. Chicago: The Year Book Publishers; Cr. 8vo., pp. 342.

Medical Appointments Vacant, etc.

For announcements of medical appointments vacant, assistants, locum tenentes sought, etc., see "Advertiser," page xxi.

Marrickville Cottage Hospital, Honorary Anæsthetist, Honorary Medical Officer in Charge of Tuberculosis Department.

Medical Appointments.

IMPORTANT NOTICE.

Medical practitioners are requested not to apply for any appointment referred to in the following table, without having first communicated with the Honorary Secretary of the Branch named in the first column, or with the Medical Secretary of the British Medical Association, 429 Strand, London, W.C.

Branch.	APPOINTMENTS.
VICTORIA. (Hon. Sec., Medical Society Hall, East Melbourne.)	Brunswick Medical Institute. Bendigo Medical Institute. Prahran United F.S. Dispensary. Australian Prudential Association Proprietary, Limited. National Provident Association. Life Insurance Company of Australia, Limited. Mutual National Provident Club.
SOUTH AUSTRALIA. (Hon. Sec., 3 North Terrace, Adelaide.)	The F.S. Medical Assoc., Incorp., Adelaide.
QUEENSLAND. (Hon. Sec., B.M.A. Building, Adelaide Street, Brisbane.)	Brisbane United F.S. Institute.
WESTERN AUSTRALIA. (Hon. Sec., 230 St. George's Terrace, Perth.)	Swan District Medical Officer. All Contract Practice Appointments in Western Australia.
NEW SOUTH WALES. (Hon. Sec., 30-34 Elizabeth Street, Sydney.)	Department of Public Instruction—Appointments as Salaried Medical Officers, with duties which include the treatment of school children. Australian Natives' Association. Balmain United F.S. Dispensary. Canterbury United F.S. Dispensary. Leichhardt and Petersham Dispensary. M.U. Oddfellows' Med. Inst., Elizabeth Street, Sydney. Marrickville United F.S. Dispensary. N.S.W. Ambulance Association and Transport Brigade. North Sydney United F.S. People's Prudential Benefit Society. Phœnix Mutual Provident Society. F.S. Lodges at Casino. F.S. Lodges at Lithgow. F.S. Lodges at Orange. F.S. Lodges at Parramatta, Penrith, Auburn, and Lidcombe. Newcastle Collieries — Killingworth, Seaham Nos. 1 and 2, West Wallsend.
NEW ZEALAND: WELLINGTON DIVISION. (Hon. Sec., Wellington.)	F.S. Lodges, Wellington, N.Z.

Diary for the Month.

Jan. 9.—N.S.W. Branch, B.M.A., Council (Quarterly).

Jan. 16.—N.S.W. Branch, B.M.A., Executive and Finance Committee.

Jan. 18.—Vic. Branch, B.M.A., Council.

Jan. 19.—Queensland Branch, B.M.A., Council.

Jan. 23.—N.S.W. Branch, B.M.A., Ethics Committee.

EDITORIAL NOTICES.

Manuscripts forwarded to the office of this Journal cannot under any circumstances be returned.

Original articles forwarded for publication are understood to be offered to *The Medical Journal of Australia* alone, unless the contrary be stated.

All communications should be addressed to "The Editor," *The Medical Journal of Australia*, B.M.A. Building, 30-34 Elizabeth Street, Sydney, New South Wales.